



FRIDAY, SEPTEMBER 19, 1879.

Train Accidents in August.

The following accidents are included in our record for the month of August:

REAR COLLISIONS.

On the evening of the 5th a freight train on the New York Central & Hudson River road ran into the rear of a passenger train, which had stopped near Tarrytown, N. Y., to repair some slight breakage of the engine. The freight engine and a passenger car were damaged.

On the evening of the 5th as some cars of a passenger train were being run into the depot at Rochester, N. Y., on the New York Central & Hudson River road, by a flying switch, they were thrown over on the wrong track by mistake and ran into a passenger train standing on a siding. A brakeman was slightly hurt.

Very early on the morning of the 8th a freight train on the New York, Lake Erie & Western road ran into the rear of a stock train which had stopped for the draw signal at Passaic Bridge, N. J. The caboose and several stock cars were completely wrecked and the engine of the freight badly broken. A lot of stock was killed, but the train-men all jumped and escaped unhurt. One track was blocked over six hours. It was said that the freight train was running much faster than it should have done, as the road at that point is very crooked and trains usually stop before crossing the draw-bridge.

On the 8th a freight train on the California Pacific road ran into a preceding freight near Sacramento, Cal., doing some damage and injuring a brakeman.

Very early on the morning of the 17th a freight train on the Baltimore & Ohio road ran into the rear of a passenger train, which had stopped on account of a disabled freight engine ahead of it, near Black Oak, W. Va. The engine and several cars of the freight were thrown over down a bank and the engineer was killed.

On the night of the 19th a freight train on the Pittsburgh, Ft. Wayne & Chicago road broke in two near Pierceton, Ind., and the rear section ran into the forward one, wrecking several cars, and blocking the road three hours.

On the evening of the 20th a freight train on the New York Central & Hudson River road ran into a preceding freight, which had stopped for water at Churchville, N. Y. The engine was damaged, and several cars badly broken, blocking the road three hours.

Very early on the morning of the 26th a freight train on the New York, Lake Erie & Western road ran into some cars which had broken loose from a stock train near Sloatsburg, N. Y. The engine and several cars were badly broken and both tracks blocked three or four hours. The fireman was hurt.

Early on the morning of the 26th a freight train on the Rochester & State Line road ran into some cars which had broken loose from a preceding freight train near Salamanca, N. Y. The caboose was wrecked and a number of empty oil-tank cars were thrown over and down a high bank, and piled up together at the bottom in a very bad wreck. The caboose caught fire and was burned up, and a brakeman who was caught under the wreck was burned to death. The engineer and fireman of the rear train were both hurt.

Early on the morning of the 29th a passenger train on the Pittsburgh, Cincinnati & St. Louis road ran into the rear of a freight train at Mingo Junction, O., wrecking several cars and blocking the road some hours.

On the morning of the 30th a passenger train on the Marietta & Cincinnati road ran into the rear of a preceding passenger train at Brighton, O., damaging two cars and injuring a passenger. There was a heavy fog at the time.

On the 30th a freight train on the Central Pacific road ran into the rear of a construction train near San Pablo, Cal., wrecking two gravel cars and blocking the road two hours.

BUTTING COLLISIONS.

On the night of the 3d there was a butting collision between a freight train and a yard engine on the Wabash road, at Danville, Ill., by which both engines and several cars were damaged.

On the 9th there was a butting collision between two freight trains on the Southern Pacific road, near Indian Wells, Cal., by which some damage was done.

On the 14th there was a butting collision between two freight trains on the Missouri, Iowa & Nebraska road at Memphis, Mo., by which both engines were slightly damaged.

On the afternoon of the 14th, on the Philadelphia & Atlantic City road, near Clementon, N. J., there was a butting collision between a freight and a crowded excursion train, by which both engines were wrecked, several cars damaged, the passenger conductor, two brakemen and two passengers killed. The damage to the passenger cars was confined to the crushing in of the platforms, and all who were killed were riding on the platforms, no one inside the cars suffering anything worse than a severe shaking up. The freight train was behind time, and was running without definite orders, although the train men knew several excursion trains were to come down, but they thought they could make the next siding before meeting them. An investigation resulted in holding the conductor and fireman of the freight, and the Assistant Superintendent of the road for trial for manslaughter.

On the morning of the 15th there was a butting collision between two freight trains on the Missouri Pacific road, near Lee's Summit, Kan. Both engines and eight cars were badly broken, an engineer and a fireman hurt.

On the morning of the 20th there was a butting collision between two coal trains on the Philadelphia & Reading road, near Mine Hill, Pa. Both engines were damaged.

On the afternoon of the 20th, on the New York, Lake Erie & Western road, near Cocheton, N. Y., there was a butting collision between a freight and a construction train, by which both engines and several cars were damaged and the road blocked seven hours. The construction train had a signal out, which the freight did not obey.

On the evening of the 20th a freight train on the Pittsburgh, Ft. Wayne & Chicago road ran over a misplaced switch and into the head of another freight which was standing on a siding in the yard at Ft. Wayne, Ind. Both engines were slightly damaged and a fireman hurt.

On the night of the 23d a stock train on the Grand Trunk road broke in two near Port Colborne, Ont., and the detached cars ran back down the grade and into the head of a following passenger train. The engine and several stock cars were wrecked, some passenger cars damaged, the engineer killed and four passengers hurt.

Late on the night of the 23d a freight train on the Atlantic & Great Western road broke in two at Corlett, O., and the rear part ran back down a grade and into the head of a following freight. The engine of the second train was dam-

aged, the caboose and several flat cars wrecked. The conductor, who was in the caboose, was killed.

CROSSING COLLISION.

On the morning of the 4th, a New York, Lake Erie & Western passenger train ran into a New York Central & Hudson River passenger train at the crossing of the two roads in Batavia, N. Y. The Central baggage and express cars were thrown over across the tracks and the Erie engine was damaged, blocking the crossing several hours. It is said that the Erie train did not stop before coming to the crossing, as required by the rules.

DERAILMENT, BROKEN RAIL.

On the night of the 17th a passenger train on the Charlotte, Columbia & Augusta road struck a broken rail near Columbia, S. C., and two cars were thrown from the track and upset. The cars were damaged and 16 passengers slightly hurt.

DERAILMENTS, BROKEN WHEEL.

On the afternoon of the 2d the tender of a passenger train on the New York Central & Hudson River road was thrown from the track near Charlotte, N. Y., by a broken wheel, the engine stopping just as it reached a high bank.

On the night of the 19th a car of a passenger train on the Central Railroad, of New Jersey, was thrown from the track near Greenville, N. J., by a broken wheel.

DERAILMENTS, BROKEN AXLE.

Early on the morning of the 8th several cars of a freight train on the Terre Haute & Indianapolis road were thrown from the track near Clayton, Ind., by a broken axle.

On the night of the 26th an axle broke under a car in a freight train on the New York Central & Hudson River road, near Palmyra, N. Y., and 10 cars were thrown from the track and piled up in a bad wreck, blocking one track all night.

DERAILMENTS, BROKEN BRIDGE.

On the evening of the 8th a bridge on the Lawrenceville & Evergreen road, near Evergreen, Pa., broke down under the locomotive of a passenger train, and the engine was wrecked. The abutments had been carried away by a sudden freshet.

On the 28th a yard engine on the Richmond & Danville road broke through a trestle on Belle Isle, at Richmond, Va., fell to the ground and was wrecked, injuring the fireman badly.

On the morning of the 30th a span in the iron bridge over Black River, at Carthage, N. Y., on the Utica & Black River road, gave way under a freight train, and five cars went down into the river. The conductor went down with them, but escaped unhurt.

DERAILMENT, LOOSE WHEEL.

On the morning of the 25th two cars of a freight train on the Pennsylvania Railroad were thrown from the track near Frankford Junction, Pa., by a loose wheel, blocking the road an hour.

DERAILMENTS, SPREADING OF RAILS.

On the afternoon of the 2d a coal train on the Philadelphia & Reading road was thrown from the track by the spreading of the rails near Frackville, Pa., where trackmen were at work and had not spiked down some new rails they had just laid. The road was blocked an hour.

A short time afterward another coal train came along, and was thrown from the track at the same place and in the same way, blocking the road two hours. After that the rails were properly secured.

On the morning of the 16th a passenger train on the Pittsburgh & Castle Shannon road was thrown from the track at Fair Haven, Pa., by the spreading of the rails, said to have been caused by rotten ties.

On the evening of the 18th four cars of a freight train on the New York, New Haven & Hartford road were thrown from the track at Stratford, Conn., by the spreading of the rails.

DERAILMENTS, ACCIDENTAL OBSTRUCTION.

On the morning of the 11th a passenger train on the Atchison, Topeka & Santa Fe road ran into a push-car loaded with rails near Dodge City, Kan., and the engine was thrown from the track and damaged.

On the night of the 24th three cars of a freight train on the New York Central & Hudson River road were thrown from the track in East Rochester, N. Y., by a brake-beam which dropped down on the rails. The track was blocked two hours.

DERAILMENTS, CATTLE.

On the 14th a construction train on the St. Louis, Keokuk & Northwestern road ran over a cow near Louisiana, Mo., and the whole train was thrown from the track, and several cars wrecked. Mr. Nicholas Dubois, Chief Engineer of the road, was killed, the conductor and five others badly hurt.

On the 19th a passenger train on the Atchison, Topeka & Santa Fe road ran over an ox near Topeka, Kan., and the engine and four cars were thrown from the track and somewhat damaged. The fireman was hurt. While waiting the clearing of the road the passengers raised a sum of money for the engineer and fireman and passed resolutions thanking them for their courage in standing by their engine and stopping the train.

On the morning of the 30th a freight train on the St. Paul, Minneapolis & Manitoba road ran over some cattle near Dassel, Minn., and the engine and five cars were thrown from the track, blocking the road several hours. The engineer and fireman were slightly hurt.

DERAILMENTS, WASH-OUT AND LAND-SLIDE.

On the evening of the 18th a passenger train on the Seaboard & Roanoke road ran into a washed-out culvert near Suffolk, Va. The engine went down into the gap with the baggage car on top of it, and both were wrecked, killing the engineer, injuring the fireman fatally and the express messenger and mail agent less severely.

On the night of the 23d a passenger train on the Western North Carolina road ran into a land-slide at Mud Cut, N. C., and one car was thrown over and badly broken.

DERAILMENTS, MISPLACED SWITCH.

On the evening of the 2d a coal train on the Philadelphia & Reading road was thrown from the track by a misplaced switch at Port Clinton, Pa., and the engine and 20 cars were piled up together in a bad wreck.

On the evening of the 5th the engine and one car of a passenger train on the Western Counties road were thrown from the track by a misplaced switch at Windsor, N. S., blocking the road three hours.

On the 6th a passenger train on the Pittsburgh, Titusville & Buffalo road was thrown from the track by a misplaced switch near Corry, Pa. The engine was badly broken, the baggage and smoking cars upset and somewhat damaged.

On the evening of the 7th the engine of a passenger train on the New York & Greenwood Lake road was thrown from the track by a misplaced switch at Cooper, N. J., delaying the train some time.

On the evening of the 11th the engine and two cars of a passenger train on the Chicago, Rock Island & Pacific road were thrown from the track at Peru, Ill., by a misplaced switch, and went down a bank into the canal. The engineer

was caught under the engine and drowned, and the fireman was badly hurt.

On the evening of the 16th a freight train on the New York Division of the Pennsylvania Railroad was thrown from the track by a misplaced switch at Lawrence, N. J., and several cars were wrecked, blocking both tracks.

On the morning of the 19th the engine and four cars of an express train on the Pennsylvania Railroad were thrown from the track by a misplaced switch at Dillerville, Pa., and the engine upset into the ditch.

On the afternoon of the 21st the engine of a coal train on the Pennsylvania Railroad was thrown from the track by a misplaced switch in Pittsburgh, Pa., and slightly damaged.

On the morning of the 23d the engine and two cars of a freight train on the New York, Lake Erie & Western road was thrown from the track by a misplaced switch at Nobody's, N. Y., the engine going partly down a bank.

On the night of the 27th three cars of a freight train on the Pennsylvania Railroad were thrown from the track at Dallas, Pa., by a misplaced switch.

On the morning of the 29th the engine and several cars of a passenger train on the North Penn & Bound Brook Division of the Philadelphia & Reading road were thrown from the track by a misplaced switch at the Erie avenue station in Philadelphia, causing some delay.

On the 29th the Cape Cod express on the Old Colony road was thrown from the track near Brockton, Mass., by a switch which some trackmen had left partly open. The engine and baggage-car left the track and went down a bank 15 feet, and the first passenger-car was thrown over and badly broken. The express messenger was badly hurt.

DERAILMENTS, UNEXPLAINED AND MISCELLANEOUS.

On the morning of the 2d some cars of a freight train on the New York, Lake Erie & Western road ran off the track near Howell's, N. Y., blocking the road a short time.

On the 4th the engine of a passenger train on the New York Elevated road ran off the track near the Battery station in New York. Only the track wheels left the track, the guard-rails preventing further damage.

On the evening of the 4th a passenger train on the Winnipeg Branch of the Canadian Pacific road ran off the track near Winnipeg, Manitoba, damaging a car and injuring five passengers slightly.

On the 5th seven cars of a freight train on the Baltimore & Ohio road ran off the track near Frederickstown, O. The cars went down a bank and several of them were completely broken up.

On the 6th a train on the Southern Pacific road ran off the track near Yuma, Arizona. Three train-men were hurt.

On the night of the 8th four cars of a freight train on the Wabash road ran off the track in Fort Wayne, Ind., blocking the road several hours.

On the morning of the 9th some cars of a freight train on the Pennsylvania Railroad ran off the track near Altoona, Pa., delaying trains several hours.

On the afternoon of the 12th some cars of a freight train on the Cleveland, Mt. Vernon & Delaware road ran off the track near Massillon, O., doing some damage and injuring two brakemen badly.

On the night of the 18th, some of the cars of a freight train on the New York, Lake Erie & Western road ran off the track near Attica, N. Y., and the caboose caught fire and was burned.

On the evening of the 14th a car of a passenger train on the Hanover Junction, Hanover & Gettysburg road jumped the track in Gettysburg, Pa., and was slightly damaged.

On the morning of the 15th some cars of a freight train on the New York Central & Hudson River road ran off the track near Peekskill, N. Y., and several of them were badly broken.

On the evening of the 19th a car of a stock train on the New York, Lake Erie & Western road ran off the track near Middletown, N. Y., delaying trains for a time.

On the evening of the 19th a freight train on the Sunbury, Hazleton & Wilkesbarre road ran off the track at Kipp's Run, Pa. An oil tank caught fire and exploded and 28 cars and the trestle bridge over the run were destroyed.

On the evening of the 19th a passenger train on the Texas & Pacific road ran off the track at Kildare, Tex., doing some damage and blocking the road five hours.

On the morning of the 21st a car of a stock train on the Missouri Pacific road ran off the track and upset in the yard at Atchison, Kan., doing some damage.

On the morning of the 23d some cars of a freight train on the Pennsylvania Railroad ran off the track at Kittanning Point, Pa., and were wrecked, blocking the road some time.

On the morning of the 25th a car of a freight train on the New York Central & Hudson River road ran off the track near Clyde, N. Y., doing very little damage.

On the 25th two cars of a freight train on the Boston & Albany road ran off the track in Springfield, Mass., and were slightly damaged.

About noon on the 26th the engine of a passenger train jumped the track on the Metropolitan Elevated road, at the Rector street station in New York.

On the afternoon of the 27th a switching engine jumped the track in the yard of the Lackawanna Iron & Coal Company, in Scranton, Pa. It went off at a curve and upset, rolling down a high bank, and was badly wrecked. There were six men in the cab besides the engineer; three of the seven were hurt so that they died in a few hours, and the other four were less severely injured.

On the night of the 27th a passenger train on the Savannah & Charleston road ran off the track near Ashpepo, S. C., damaging several cars and blocking the road 12 hours.

BOILER EXPLOSIONS.

On the afternoon of the 6th a Boston & Albany passenger engine exploded its boiler while standing on the turn-table in the yard at Greenbush, N. Y. It had just come in with a train, and a machinist was adjusting the safety-valve. The engine was torn to pieces, the turn-table wrecked, the fireman and two machinists killed, the engineer, the yard-foreman and another man badly hurt. The engine was built in 1871 and had lately been overhauled. Low water is thought to have caused the explosion. The boiler gave way around the mud-ring, the outside fire-box shell tearing apart.

Very early on the morning of the 7th a yard engine on the Cleveland, Columbus, Cincinnati & Indianapolis road exploded its boiler while standing at the Atlantic & Great Western freight depot in Cleveland, O. The forward part of the engine was torn to pieces, damaging the depot, and a large piece of the boiler was thrown through the front of a neighboring house. The engineer was in the cab, but escaped unhurt. The engine was one of the oldest on the road.

On the morning of the 26th a yard engine on the Cleveland, Columbus, Cincinnati & Indianapolis road exploded its boiler while standing on the track at Brightwood, Ind. The engineer, who was out oiling the driving boxes, and a man who stood by him were badly hurt; the fireman, who was in the cab, escaped uninjured. The middle sheet of the barrel of the boiler was entirely torn out, and the engine was pretty well broken up. The boiler had 110 pounds of steam and plenty of water. The engine was an

inside-connected one, built at the old Cuyahoga Works some 20 years ago.

This is a total of 79 accidents, whereby 19 persons were killed and 59 injured. Ten accidents caused the death of one or more persons; 18 caused injury but not death, while in no less than 56, or 70.9 per cent. of the whole number, there was no injury serious enough for record.

As compared with August, 1878, there was an increase of four accidents; a decrease of 17 in the number killed, and of 49 in the number injured.

It is not possible, however, to draw any general conclusions as to the relative fatality of different classes of accidents. Probably boiler explosions are the most generally fatal, yet this month one is reported in which no one received the slightest injury.

August usually has the largest number of accidents of any of the summer months, but this year it has been outdone by July. Wash-outs and land-slides, usually common at this season, this year appear only in two cases, and there is no uncommon number of any of the accidents peculiar to the

The averages per day for the month were 2.55 accidents, 0.61 killed and 1.90 injured; for the year they were 2.30 accidents, 0.54 killed and 2.08 injured. The average casualties per accident were, for the month, 0.241 killed and 0.747 injured; for the year, 0.233 killed and 0.901 injured.

Dudley's Dynagraph.

Any one who will take the trouble to collect all the records and reports of experiments made to determine the tractive

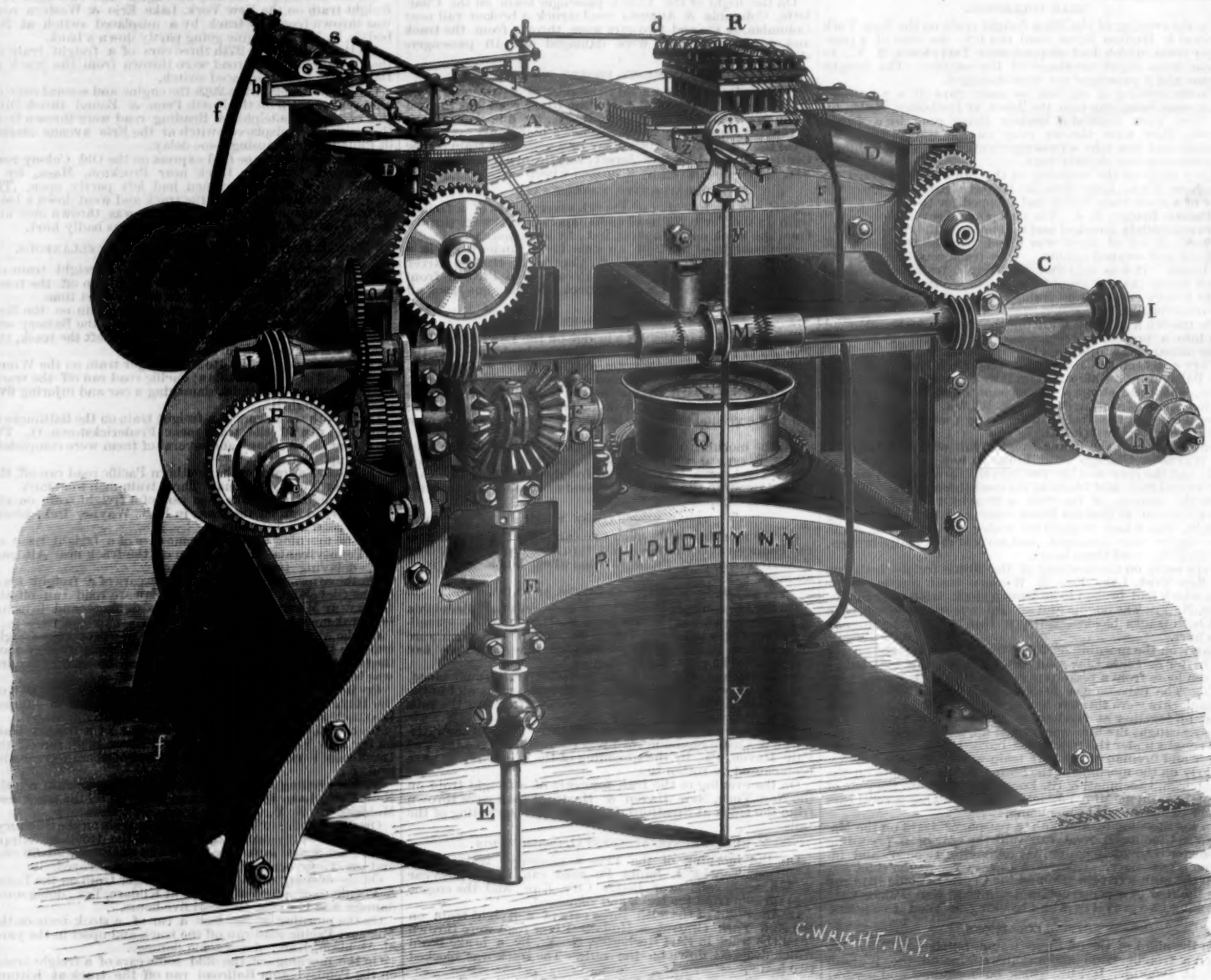


Fig. 1.
DUDLEY'S DYNAGRAPH.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear collisions.....	12
Butting collisions.....	10
Crossing collision.....	1
DERAILMENTS:	
Broken rail.....	1
Broken wheel.....	2
Broken axle.....	2
Broken bridge.....	3
Loose wheel.....	1
Spreading of rails.....	4
Accidental obstruction.....	2
Cattle.....	3
Wash-out.....	1
Land-slide.....	1
Misplaced switch.....	12
Unexplained.....	21
Boiler explosion.....	3
Total.....	79

Five collisions were caused by trains breaking in two; three by failure to use or observe signals; one each by a flying switch, by too fast running, by fog and by misplaced switch, and one, at least, by reckless disregard of rules and of ordinary prudence, the natural result of inefficient officers and utter lack of discipline. Twenty-two accidents are traced directly to defects or failure of road or equipment.

The division of accidents and casualties according to classes of trains may be stated as follows:

Accidents:	Collisions.	Derailments.	Other accidents.	Total.
To passenger trains.....	4	23	1	28
To a passenger and a freight.....	5	1	1	7
To freight trains.....	14	30	2	46
Total.....	23	53	3	79
Casualties:				
Killed by.....	9	7	3	19
Injured by.....	12	42	5	59
Total.....	21	49	8	78

This month collisions caused the largest number of deaths.

season. The total number is considerable, but it cannot be traced to any particular cause. Malicious derailments are fortunately absent, but no less than 18 misplaced switch accidents—one collision and 13 derailments—are a disgraceful feature of the record. Misplaced switches may certainly be classed among the causes of accident which can be prevented by proper management, and their continued occurrence is not creditable.

Of the three broken bridges one was a common wooden trestle, one failed through the washing out of an abutment, while the third was an iron truss bridge, and no cause is assigned for its failure.

For the summer just closed the record is as follows:

	Number of accidents.	Killed.	Injured.
June.....	64	18	55
July.....	81	14	54
August.....	70	10	50
Total.....	224	51	168
Total, same months, 1878.....	185	55	207
" " 1877.....	200	83	456
" " 1876.....	206	58	318

The summer of 1879, therefore, while it had the largest number of accidents, had less fatal ones, and the casualties are fewer in number than in any of the three summers preceding.

For the year ending with August the record is as follows:

	Number of accidents.	Killed.	Injured.
September.....	78	22	53
October.....	61	35	163
November.....	68	15	54
December.....	63	19	58
January.....	113	23	90
February.....	88	11	75
March.....	61	14	50
April.....	50	4	27
May.....	37	5	20
June.....	64	18	55
July.....	81	14	54
August.....	70	10	50
Total.....	841	196	758
Total, same months, 1877-78.....	787	198	724

resistance of various kinds of railroad vehicles, will be surprised at their number and the amount of literature there is relating to that subject. A student will, however, search in vain for a satisfactory solution of some of the simplest questions concerning the power required to draw vehicles under different conditions. The amount of resistance due to curves, to the spread of the wheels, their size, the lateral play between the flanges and rails, and the diameter of the journals, is still involved in almost as much obscurity as it was forty years ago. Those who have undertaken to investigate this subject very soon learned that it is much more complex than it at first seems; and doubtless many who have tried to shed light on it have had an experience similar to that of Pam-bour, which he has described in his old book on Locomotive Engines*, in which he says:

"The most natural means of determining the friction or resistance of the wagons seemed to be the dynamometer, which gives directly the force of traction required to execute the motion; but as the act of drawing, either by men or any other living motor, takes place by starts, the dynamometer oscillates between very distant limits, and can give no certain result. It appeared, however, to us, that if the draft were effected by an engine, the effort of which is always equal, and the motion regulated by the mass of the train itself, the oscillation of the dynamometer would not be so great, particularly if the instrument were to be fastened to one of the last carriages, on which the pulsations of the engine have naturally much less effect.

"We expected to see the index of the balance remain nearly steady; but we were disappointed. Its average position was near the point marked 100 lbs.; but it underwent very great variations, that is to say, from 50 lbs. at least to 170 lbs. at most; and even two or three times, at certain extraordinary starts of the engine, the needle ran to the end of the balance, marking 250 lbs. As, however, this case happened only accidentally, it could not be considered as an effect of the regular draft; and, indeed, after the shock which had caused this extraordinary excursion, the needle immediately returned to its usual point

* Edition of 1836, page 83.

of 100 lbs., and began again its oscillation between 50 lbs. and 170 lbs. After having, to no purpose, waited to see whether the motion would become more regular, we concluded that the experiment was not susceptible of a greater degree of precision."

The experience of numbers of persons who have undertaken, with more or less enthusiasm to throw some light on this imperfectly-understood subject, has been identical with that of Pambour many years ago. A person without much experience in making such experiments is very apt to think that by placing a sufficiently strong spring-balance between a locomotive and a train of cars, the indication of the former would show at once the resistance of the latter, and would thus afford the means of answering most of the ques-

A clutch collar *N* is attached to the shaft by a feather and is arranged so that it can engage with either of the mitre wheels, so that the machine can be used in running in either direction. The shaft *G F* has a pinion in it behind the pair of change gear wheels *G*, not shown in the engraving. This pinion engages with one of the wheels *G* and that with the wheel *H* on the horizontal shaft *L I*. On this shaft are four worms, *L*, *K*, *J* and *I*. *I* and *L* are keyed to the shaft, but *J* and *K* are attached to sleeves which are loose on the outside of the shaft. Either *J* or *K* can be driven by the clutch *M*, which is attached to the shaft by a feather. The worms *I* and *L* drive the worm-wheels *O* and *P*, which are connected to the shafts of the drums by the friction produced

underneath the car, and consequently no pressure on the fluid in the cylinder *a*, its piston is drawn back by the springs *s s* and with it the lever *b c*, so that the position of the pen *e* corresponds with that of *j* and the base-line which the latter draws. So soon as there is any pressure in the cylinder *a* its piston is forced outward against the tension of the springs *s s*, and consequently the pen *e* is carried away from the base-line a distance proportional to the pressure, and the diagram thus indicates the tension on the draw-bar.

The speed of the train is recorded by means of an electrical attachment with the chronometer clock *Q*. This is arranged so as to break an electrical circuit every second,

Fig. 2.

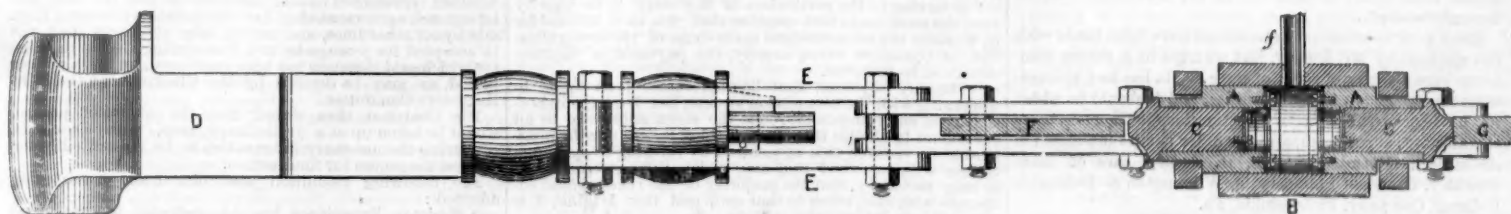
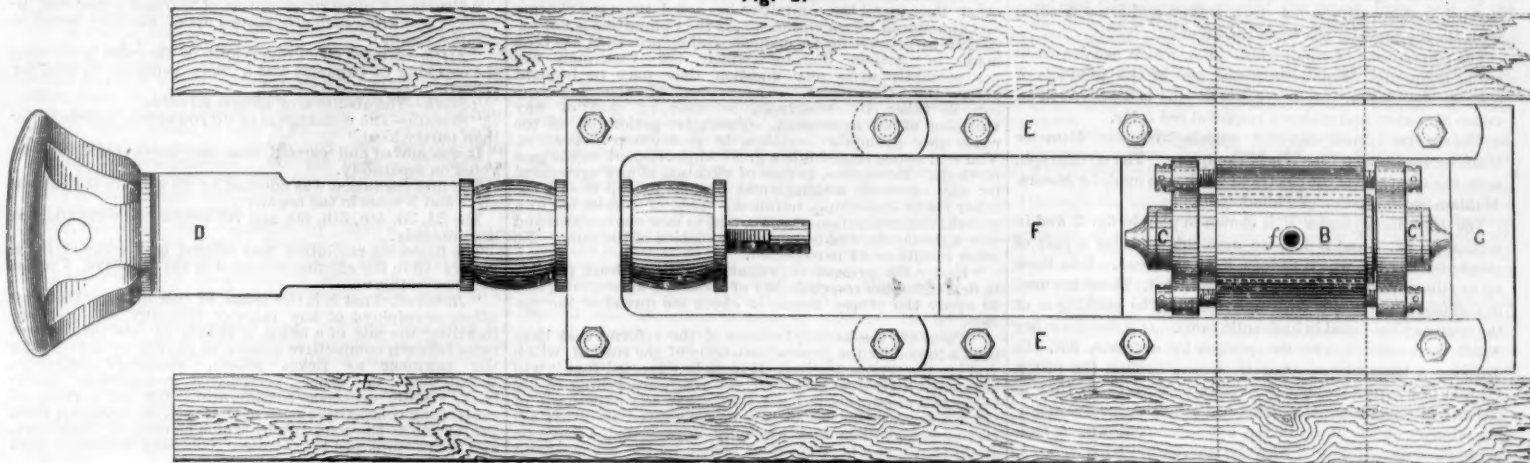


Fig. 3.

DUDLEY'S DYNAGRAPH.

tions which all railroad engineers have been asking ever since the beginning of railroads. But a little use of such an instrument very soon shows that its indications, as stated by Pambour, are so exceedingly variable that their observation affords no sure guide for determining the average resistance for any given time. To be of any use at all, it is absolutely necessary that such instruments should be self-recording. So much depends, too, upon the variations of speed that to be able to draw intelligent inferences from the resistance of a train, as recorded by a dynamometer, it is necessary that the speed at each instant should be known. A very little experimental investigation shows that there are a considerable number of other phenomena which must be taken into account before anything like complete determinations of the resistance of railroad trains can be made. The subject is, in fact, very much more complicated than it at first appears, as is shown by the instrument or machine which is illustrated by the engravings herewith, an examination of which will give some idea of how the subject has been differentiated, as the scientific men say.

Instead of a simple dynamometer or spring-balance, such as Pambour and most persons who first take up the subject have used, and which shows simply the tension on the draw-bar, we have in Mr. Dudley's dynagraph a machine with no less than fourteen recording pens which make diagrams of the phenomena concerned in drawing a train.

Before describing these a little general explanation is required. The machine as represented in fig. 1 is placed in an eight-wheeled car, 50 feet long, constructed especially for the purpose. The draw-bar of this car is connected with a piston which works in a cylinder under the floor, and which is filled with oil. These are so arranged that if the draw-bar is subjected to strains of either tension or compression they are resisted by the oil in the cylinder, and the former is therefore subject to the pressure due to the strains on the draw-bar or the resistance of the train. The cylinder is connected by a pipe, *f*, figs. 1, 2 and 3, with a smaller cylinder *a* $\frac{7}{16}$ in. in diameter at the top of the machine. This has a piston fitted into it which is connected by a rod with the parallel motion *b c d*. This latter carries a pen, *e*, which draws a diagram of the resistance of the train on a roll of paper, *A A*, 30 in. wide. Part of the diagram drawn by this pen is shown at *g g*. The roll of paper is placed in the drum *C* and is drawn over the table *A A* by feed-rolls, *D D*, and is wound up on the drum *B*. These drums and rolls are driven by a worm-gear on the axle, shown in figs. 4 and 5, which operates the vertical shaft *E E*, fig. 1. The worm-gear, being on the axle, is underneath the floor of the car, and is not shown in fig. 1. The shaft *E* has a mitre-wheel at the upper end which gears into a pair of mitres, *F F*, which are loose on a horizontal shaft, *G F*.

by springs (one of them shown at *h*) against discs, *i, i*, the purpose of the drums being simply to wind and unwind the paper, and keep it taut; which is effected by the friction arrangement. The paper is fed over the table uniformly for the distance travelled by either pair of the feed-rollers *D* or *D'*. Only one of each pair of these rollers is shown, the other being

Fig. 4.

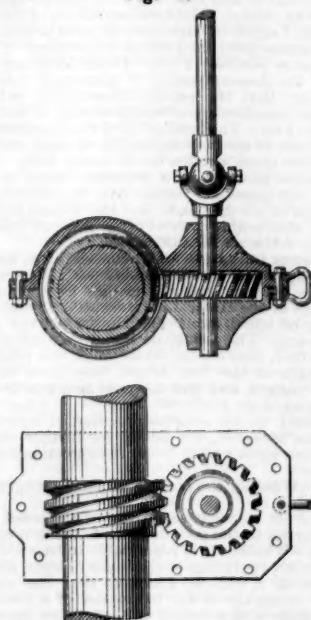


Fig. 5.

below the surface of the table. These rollers are 2.472 in. in diameter, and are made of steel and ground with the utmost precision, so as to be 0.003 in. larger in diameter in the centre than at the ends, the object of this being to draw the paper through evenly. If the rolls were made perfectly straight they would be liable to seize the paper on one side more than on the other. The paper can be wound by the mechanism in either way, that is, from *C* on to *B* or from *B* on to *C*, so that the instrument can be used while running the car in either direction.

As stated before, the pen *e* draws a diagram of the resistance of the train. A stationary pen, *f*, draws a straight base line on the paper as it is rolled across the table. When there is no tension or compression on the draw-bar and cylinder

which releases an armature of an electro-magnet at *R*, with which one of the pens, shown at *k*, is connected. This moves the pen $\frac{1}{16}$ in. horizontally, which produces an indentation in the line which is drawn on the paper. The distance between these indentations indicates the space traveled over in one second. The next pencil to *k* is arranged so as to make a similar record every ten seconds. Still another pen can be used to record minutes.

A pen is also arranged so that by an electrical connection it records each revolution of the driving-wheels. Another records the mile-posts as they are passed, which is done by an assistant, who touches an electrical key at each post. The alignment of the road, that is, the curves and straight lines, are recorded by a pen in a similar way. A pen next to this is connected with a water-meter attached to the feed-pipe of the locomotive and records the quantity of water consumed at different times and places. Still another pen is arranged so that an assistant on the locomotive records every shovelful of coal as it is put on the fire. The same pen has been used to record the time that black smoke escaped from the chimney. A pen is also provided which records the distance run by the car, and another records the indications of an anemometer on top of the car. At *s* is the fourteenth pen, which records the surface of the track. This is done by a small vessel or cylinder about 3 in. in diameter which is attached to the equalizing lever immediately over the journal-box. This vessel is filled with oil and covered with a thin metal diaphragm, which is pressed down by a spiral spring. The chamber containing the oil is connected by a pipe with a gauge, *m*, which also has a similar diaphragm which acts against a compound lever carrying the pencil *z*. The jolting of the car over inequalities of the track produces pulsations in the diaphragm over the journal-box, and consequently more or less pressure on the liquid, which pressure is communicated to the upper diaphragm at *m*, and thus recorded by the pen *z*.

An integrating apparatus is also attached to the instrument at *S*. This consists of a plate, *S*, which is attached to the end of a vertical shaft driven by the gear-wheel *O* and a worm, not shown in the engraving. The speeds are so arranged that the plate makes three revolutions per mile run by the car. A small wheel, *a*, which is attached to a rod, *q*, connected with the piston in the cylinder, *a*, bears on the plate *S*. When there is no pressure in the cylinder, the small wheel, *a*, is exactly in the centre of *S*, and consequently the revolution of *S* does not cause the wheel *a* to revolve. When the piston is forced out by the pressure, the small wheel is carried beyond the centre of the plate *S*, and consequently the movement of the latter then causes the small wheel to revolve. Of course the greater the pressure in the cylinder *a* the farther will the wheel *a* be carried from the centre of *S* and the greater will be the path on which it rolls, and consequently the larger the number of its revolutions.

lutions. At each revolution of the wheel it breaks an electrical circuit, and connecting by a wire with one of the electro-magnets at *R* operates a lever which carries one of the pens shown at *k*. It is obvious from this that the greater the pressure on the cylinder *a* the larger the number of revolutions which will be made by the small wheel *n*, and therefore that they will be a measure of the work done; so that multiplying the number of revolutions by a known constant will give the number of foot-pounds.

The disk *S* is graduated on the edge, and has a vernier attachment with which very minute measurements can be made of the distance run.

The battery jars for working the electrical apparatus are carried underneath the car in a locker, and are connected with the magnets by the wires shown at *r*.

The pens consist of small glass tubes, which are drawn to a fine point and filled with eozine, one of the products of coal-tar distillation. A half grain of this is dissolved in an ounce of water, and makes a beautiful red color.

The car has turned cast-iron wheels 33 in. in diameter made by the Lobdell Car-Wheel Company. The dynamograph, with the exception of the electrical work, was made by Messrs. William Sellers & Co., of Philadelphia.

The draw-bar cylinder *B* is shown in plan in fig. 2 and in section in fig. 3 and is 4 in. in diameter and has a pair of large pistons, *A A*, which fit into it at each end. Into these an auxiliary pair of pistons, *C C*, are fitted. These are used in making experiments with light loads. The packing is of the ordinary kind used in hydraulic ram. *D* is the draw-bar which is connected with the pistons by a frame, *E E*. In drawing a train the cross-bar *G* presses against the piston *C*, and in pushing the bar *F* presses against *C*, so that in either case the strain on the draw-bar produces a corresponding pressure on the liquid in the cylinder. The pipe *L* connects the main cylinder *B* with the smaller cylinder *a*, fig. 1, on the dynamograph above, the working of which has already been described.

Figs. 4 and 5 represent the worm gear on the axle by which motion is transmitted to the mechanism above through the shaft.

Many very interesting experiments have been made with this machine by Mr. Dudley, and we hope in a future number to give a report of some of these. He has had this machine constructed at his own expense, and it should be added that he is prepared to make investigations in the resistances of trains for railroad companies or other parties interested in the subject. His address is: P. H. Dudley, care of Isaac Hinkley, President Philadelphia, Wilmington & Baltimore Railroad Company, Philadelphia, Pa.

Conference of General Passenger Agents with Commissioner Fink.

OFFICE OF THE JOINT EXECUTIVE COMMITTEE,
No. 346 BROADWAY, NEW YORK, Sept. 11, 1879.
Pursuant to the call of the Chairman, the convention of the general passenger agents of the roads represented on the Joint Executive Committee, and others invited to take part in the proceedings, assembled at noon this day; Messrs. A. J. Smith and George H. Daniels acting as secretaries.

The roll being called, the following lines were represented:

Atlantic & Great Western, by W. B. Shattuc.
Baltimore & Ohio, by Albert Fink.
Boston & Albany, by Edward Gallup.
Canada Southern, by F. E. Snow.
Chicago & Alton, by James Charlton.
Chicago, Burlington & Quincy, by J. R. Wood.
Cleveland, Columbus, Cincinnati & Indianapolis, by A. J. Smith.
Grand Trunk, by Wm. Wainwright.
Great Western, by Wm. Edgar.
Indianapolis & St. Louis, by C. C. Cobb.
Lake Shore & Michigan Southern, by J. W. Cary.
Louisville, Cincinnati & Lexington, by S. S. Parker.
Marietta & Cincinnati, by Albert Fink.
Michigan Central, by H. C. Wentworth.
New York Central & Hudson River, by C. B. Meeker.
New York, Lake Erie & Western, by J. N. Abbott.
Ohio & Mississippi, by C. S. Cone, Jr.
Pennsylvania Railroad, by N. W. Gwinner.
Pennsylvania Company, by F. R. Myers.
Pittsburgh, Cincinnati & St. Louis, by H. Monett and W. L. O'Brien.

Toledo, Peoria & Warsaw, by H. C. Townsend.
Vandalia Line, by E. A. Ford.
Wabash, by H. C. Townsend and C. W. Bradley.
Chicago & Pacific, by G. H. Daniels.
Chicago & Northwestern, by W. A. Thrall.
Chicago & Iowa, by M. L. Ettinger.
St. Paul & Sioux City, by W. H. Dickson.
Hannibal & St. Joseph, by T. Penfield.
Missouri Pacific, by F. E. Fowler.
St. Louis, Kansas City & Northern, by C. K. Lord.

The Chairman made the following remarks:
"This meeting is called to consider:

"First—The best means that should be adopted by the Joint Executive Committee to maintain the agreed passenger rates, and

"Second—To consider the subject of passenger pools.

"The results at which this meeting will arrive are to be put before the next meeting of the general managers, which is to be held on the 23d of this month.

"As regards the matter under consideration, I am aware that the subject presents the gravest difficulties. So far, it seems, it has been impossible to devise the proper means to carry out the reforms in the conduct of the passenger business which, it is admitted on all sides, are most desirable. It would seem useless to consider the subject further if there had not been, within the last few months, an organization formed through which it is made possible, at least, to carry out the agreements made between the railroads. Heretofore the practical execution of any agreement was utterly impossible. Roads met in convention, passed resolutions, the representatives dispersed and no further steps were taken to secure the execution of the agreement.

"I wish to call your particular attention to the advances that have been made in this respect by the general managers of the roads in establishing the Joint Executive Committee, with a permanent chairman, to whom reports of violation of agreement are to be made, and through whom the active co-

operation of all the roads willing to maintain them can be secured, as against the roads violating the same.

"A copy of this organization has been furnished you, and I will call your attention to the principal features of the same.

"Article 4 provides that the Committee shall take cognizance of all through freight and passenger traffic in both directions.

"Article 4 states that its object shall be the maintenance of agreed rates, the abatement of expenses on all competitive traffic.

"Article 15 provides that all companies are to make complaints as to direct or indirect violation or evasion of rates promptly to the Chairman with as much proof as may be obtainable, and whose duty it will be to investigate the charges.

"And, according to Article 16, the roads agree not to take any steps to meet alleged abatement or evasion of rates by other lines, until the committee has acted upon the charges and announced its conclusions. As the Committee is not expected to remain in permanent session, provision has been made in Article 31, by which the Chairman can act promptly upon any question that may be brought before the Committee. The votes of the members can be taken by telegraph, so that in case of any violation of an agreement, cooperative action of all the roads may promptly be taken in protecting themselves. You will notice that this is a great improvement on the past methods. Heretofore, in case of violation of any agreement by any one road, nothing could be done to stop it—all the other roads had simply to follow. This, of course, led to a general demoralization of rates, and to new conventions and new agreements, and to repeated violation of the same. No other results could be expected.

"Under the present organization, it is at least possible to determine the responsibility of violating agreements, and to apply the proper means to check the spread of the disease.

"These are the leading features of the reforms that have been adopted by the general managers of the road of which you are the representatives. It must be expected that it will take some little time before all the roads are willing to act under this organization, but I think that the experience of the last few months has already demonstrated its great advantages, and when they are fully appreciated, I have no doubt that many of the present abuses in the management of the competitive passenger and freight traffic can be corrected. I make these remarks to show that there is some possibility, at least, that any measure that you may now recommend, or that may hereafter be proposed, can be carried out.

"Referring to the particulars of the work to be done by you, the most important question that you have to consider is, whether the acknowledged main cause of the demoralization of passenger rates, namely, the payment of commissions, can be removed.

"The only objection that has heretofore been made to dispensing with the commission system, has been the impossibility of enforcing on all roads the strict adherence to an agreement to abolish the same. I think it will now be practicable to enforce this agreement by refusing to exchange tickets with any road that may violate this agreement. It is only necessary that the majority of the roads should co-operate with each other to that end, and this, I think, it is reasonable to believe they will do.

"I had recently occasion to take the vote upon these questions by telegraph, and I found a general willingness and real anxiety to dispense with commissions. There were only two roads opposed to it on the ground already stated, that the measure could not be enforced alike on all parties.

"Another cause of demoralization of passenger rates is the practice of issuing tickets via long routes that are hardly ever used by the travelers. The scalpers are the only parties for whose benefit they are issued. For example, a ticket is issued from St. Louis to New York via Chicago and Cincinnati, Baltimore and Philadelphia. Of course, no traveler thinks of taking this route unless he wants to stop at the several places named, and in that case he should pay full local rates. Tickets of this kind were recently on sale in scalping offices in Cincinnati. The representatives of the roads interested should agree to withdraw all such tickets. The same difficulty arises from the present adjustment of rates from and to Boston via New York. These tickets are the cause of much of the demoralization of passenger rates, and I am glad to say, that the parties immediately in interest have now under consideration a readjustment of rates that may remove the evil. The issue of third class unlimited tickets is another cause of the demoralization of rates, and its removal is now under consideration by the trunk lines.

"It is believed that, in a measure, some of the present abuses in the passenger traffic can be removed by closer cooperation of all the roads; but the opinion is generally entertained, that nothing short of a general passenger pool will finally settle all the difficulties.

"The trunk lines have under consideration the formation of a passenger pool among themselves. The action that has so far been taken in this matter has been published in the proceedings of the Trunk Line Executive Committee of Aug. 13, a copy of which has been furnished to the general passenger agents. The result of the investigation has established the fact, that during seven years the relative passenger earnings of the four trunk lines have varied only a small percentage, and that it would be perfectly practicable to base a passenger pool upon the gross earnings of the roads, which would be the simplest method of carrying out the pool. This, however, is a matter for further consideration. The question upon which your recommendations are to be made, are:

"First—Whether the pooling of the passenger traffic is at all desirable.

"Second—If so, what roads west of the trunk lines should become parties to the pool in order to make it effective.

"Third—Whether it is practicable to base this pool upon the competitive earnings of the roads or upon the gross earnings. I think it will be desirable that the various roads which are to engage in the formation of a pool should furnish this office with a record of their gross passenger earnings for the last five or ten years, as may be agreed upon, for the purpose of establishing the fact, whether the relative earnings of the several roads varies much in the several years or not, and I would ask that such information be furnished me.

"The convention will now proceed to business. Any other subject besides those named may be brought before the convention by its members."

On motion of Mr. Ford, it was

"Resolved, That the meeting take up the recommendations of the Chairman of the Executive Committee in the order in which they are mentioned."

The Chairman explained that as there appeared to be some reluctance on the part of the gentlemen present taking up the question, that it was with the view of relieving the general managers that he had suggested that the measures proposed should be first considered by the heads of the passenger departments, and finally submitted to the general managers for their approval. There should be a free expression of opinion, and an effort should be made to arrive at some conclusion on the part of the gentlemen present.

The following resolution was then offered:

"Resolved, That all tickets, or the unused portion of tickets, sold between competing points at less than agreed tariff rates, be redeemed by the issuing company at the regular agreed rates, whenever and by whomsoever such tickets may be presented for redemption."

After discussion, the motion was withdrawn for the purpose of allowing the following resolution to be offered:

"Resolved, First—That as the first and most important step toward the better maintenance of passenger rates, we recommend to our general managers the total abolition of commissions on competitive business.

"Second—That we recommend a complete revision of our present coupon ticket system; that superfluous tickets may be dispensed with, unlimited tickets put at local rates by short lines as near as practicable, and a closer limit be agreed upon and carried out for limited tickets.

"Third—The abolition of competitive excursion business.

"Fourth—A more strict system of through rates and divisions, and after such are agreed upon, auditors asked to comply thereto.

"Fifth—A more strict observance of the rules governing the checking of baggage, and a more complete system for reporting the excess collected.

"Sixth—The abolition of all special rates.

"Seventh—The withdrawal of all round-trip tickets other than purely local."

It was moved and carried that the above resolutions be voted on separately.

The first resolution was adopted by 23 votes in the affirmative and 3 votes in the negative.

The 2d, 3d, 4th, 5th, 6th and 7th resolutions were adopted unanimously.

The following resolution was offered and adopted by a vote of 16 in the affirmative and 3 in the negative, 7 members not voting:

"Resolved, That it is the sense of this meeting that any officer or employé of any railway company selling or authorizing the sale of a ticket or tickets at less than agreed rates between competitive points, or paying or authorizing the payment to ticket sellers, passenger solicitors, speculators, or other persons, a commission, drawback, rebate, or other consideration, for the purpose of controlling competitive passenger travel, be dismissed from the service of the company by which he may be employed, and not re-employed by any other company forming a part of this Association."

The following resolution was offered and unanimously adopted:

"Resolved, That hereafter when any agreement made by the Joint Executive Committee is violated by any line, whether represented in said committee or not, the line violating such agreement shall have its tickets withdrawn from sale by all other lines, and its own issue of tickets shall not be accepted for passage by any line during double the time for which said violation has been continued, or for a longer period, as may be decided by the Chairman of the Joint Executive Committee."

The Chairman then stated, that the subject of pooling would be taken up as a preliminary step, with a view of preparing the necessary information to be submitted to the general managers for final action.

The following resolution was offered and unanimously adopted:

"Whereas, Experience has demonstrated the fact that passenger interests are best served through the medium of pools, as a sure cure for existing troubles; therefore,

"Resolved, That this meeting recommend that a passenger pool be organized between points north of the Ohio and east of the Mississippi River and the seaboard, and between such intermediate points as may be thought proper by the general managers."

The following resolution was unanimously adopted:

"Resolved, That our general managers having intimated the desirability of a pool of passenger earnings, we would suggest, as a preliminary step to such action, that each road furnish the Chairman with its gross passenger earnings for the past five years, and also the information as to what roads, other than those represented on the Joint Executive Committee, should participate in such pool within the territory named in the preceding resolution."

The Chairman stated that in furnishing the information called for in the above resolutions, none of the roads would in any way commit themselves; the information being simply required for the purpose of ascertaining what relations there existed between the passenger earnings of the different roads in different years.

On motion the meeting adjourned.

ALBERT FINK, Chairman.

A. J. SMITH, } Acting Secretaries.
GEO. H. DANIELS, }

Master Car-Painters' Association.

The annual convention of this association assembled at the Michigan Exchange in Detroit, Sept. 10. The proceedings were opened by an appropriate address of welcome from President Robertson.

The following members answered to their names when the roll was called:

D. D. Robertson, Michigan Central.
J. H. Will, New York & Harlem.
R. McKeon, Atlantic & Great Western.
John B. Cox, Eastern.
R. T. Beargley, Maine Central.
C. L. May, Houston & Texas Central.
H. C. Burch, Wagner Car Works.
D. C. Cooley, Chicago, Burlington & Quincy.
Wm. Sharp, Lake Shore & Michigan Southern.
Wm. Amerson, Chicago & Northwestern.
John Rattenbury, Chicago, Rock Island & Pacific.
J. C. Stout, Kansas Pacific.
H. M. Billings, Pittsburg, Cincinnati & St. Louis.
A. N. Bradley, Ohio & Mississippi.
George Forby, Missouri Pacific.
C. E. Bradley, Fullman Car Works.
Henry Block, Cleveland, Columbus, Cincinnati & Indianapolis.
A. F. Sweet, Detroit, Lansing & Northern.
E. C. Stow, Detroit, Grand Haven & Milwaukee.
J. C. Bischoff, Chicago & Pacific.
Wm. Davis, Canada Southern.
C. T. Patterson, Grand Rapids & Indiana.
J. M. Jander, International & Great Northern.
T. J. Rodabaugh, Pittsburgh, Fort Wayne & Chicago.
A. Rooks, Des Moines & Minneapolis.
T. J. Hanlen, Columbus & Hocking Valley.
George Sage, Cleveland, Columbus, Cincinnati & Indianapolis.

R. McKeon, the Secretary and Treasurer, read his annual report, in which he noted with pleasure the increasing interest manifested by master car-painters and the steady growth of the Association. Many were interesting themselves in that which was intended for their benefit—a closer alliance, having for its object improvement in the art of car-painting. The prime object of these annual meetings was to afford a practical interchange of views concerning the best methods

of mixing and applying the several ingredients used in the painting and finish of railroad rolling stock. The Secretary noted with regret the negligence of certain members in the payment of annual dues; 10 members had been lost from this cause during the year. Ten new members were added during the year and one was reinstated, making the present membership 35. The Secretary closed his report with an appeal for hearty cooperation, and expressed the belief that ere long the organization would be second to none in the mechanical branches of railroad work.

After a recess for dinner, the old officers were reelected for the ensuing year.

The various subjects previously selected for discussion were then taken up in their regular order. The first was "Cleaning of cars inside and outside preparatory to varnishing; what is the most economical and best method?"

The first speaker was H. M. Billings, who said the old method of cleaning cars with ordinary soap had been nearly abandoned. There were a variety of new renovating agents employed, but care and discretion must be employed in their use. A very effective compound which he had used with success was as follows: 10 pounds sal-soda, 3 pounds white Castile soap, 1 quart ox-gall and 20 drachms starch, although the latter ingredient was not essential. Another excellent mixture, which formed a thicker compound than the other, was: 10 pounds sal-soda, 10 pounds common brown soap, and 8 ounces each of borax, salts of tartar and ammonia. Both should be used with care, according to the judgment of the master painter, and must be reduced according to circumstances. For the purpose of ordinary renovation they were not desirable. Mr. Billings thought every master painter should become better conversant with the principles of chemistry.

The discussion was continued by Messrs. Will, Stow, Forby, Cooley, Cox, Jander, Bradley and McKeon, several of the speakers objecting to the use of any thing beyond soap and water, on the ground of injury to the varnish, while others thought they were necessary, and would do no harm if properly used.

The second topic discussed was: "Which will wear the longest, two coats of hard rubbing varnish and one of wearing body, or one coat of hard rubbing and two coats of wearing body?"

This was discussed at some length, with considerable differences of opinion.

The convention then adjourned to the next day, and in the evening the members attended the theatre by special invitation.

SECOND DAY'S SESSION.

On the second day the following additional members appeared: G. G. Widger, Lake Shore & Michigan Southern; Joseph Maycock, New York, Lake Erie & Western; E. Bailey, Hannibal & St. Joseph; A. P. Legreo, Louisville, Cincinnati & Lexington; A. A. Nichol, Northern Central; Nelson Nehr, Wabash; J. Weymer, of New York; M. W. Stines, Barney & Smith Car Works.

The first question taken up for discussion was: "What makes the best size for gilding and for wearing and working easily?" This was discussed at some length by Messrs. Bradley, Forby, Cooley, Cox, Amerson, Jander, Sharp, Billings, Block and Sage.

The next question was: "Are head-linings injured or improved by varnishing?" Messrs. Robertson, Burch and Bradley opposed varnishing, believing that it injured the appearance, and that varnish would always crack more or less. Messrs. McKeon and Cooley advocated varnishing, chiefly on the ground of economy.

The next topic was "The best mode of painting and finishing the body of a car, durability and economy taken into consideration." This topic called out a long discussion, in which Messrs. Bradley, Stout, Cox, Jander, Cooley, Rattenbury and Maycock took part. Several speakers advocated the keeping of a record of every car painted, with notes of the methods used, as giving an opportunity to make intelligent tests. Others referred to the necessity of allowing full time for the priming coat to dry, if durability was desired.

The question, "What is the best dryer, and what makes the best mixture for finishing head-linings?" was discussed by Messrs. Bischoff, Sweet, Cooley, Legreo, Stines and others. A general preference for Japan gold-size was expressed. On motion, Mr. E. C. Bradley was requested to prepare a paper on the cause of several Pullman cars cracking while they stood in the yard at the Detroit shops.

"What is the best and most economical style of ornamentation for head-linings?" called out a general expression of opinion. Moderate decoration had strong advocates, and the speakers generally acknowledged the desirability of conforming the head-linings to the general style of the decoration of the car.

The next question was: "Which is the most economical and durable color for painting the outside of cars?" Mr. Davis, of the Canada Southern, read a paper advocating the use of light colors. Several speakers agreed that light colors were the most durable, although some admitted that striping could be done on dark colors on a single coat, where light colors required two or three. Light colors, however, required less varnish. In most cases painters could exercise their own judgment in this matter, but had to use the general color adopted by the company for its cars.

This closed the business for the day.

In the afternoon the members accepted the invitation of Berry Brothers, of Detroit, to take a steamboat excursion. They enjoyed a sail up and down the beautiful Detroit River on the steamboat Northwest, getting a fine view of the city and its surroundings. The sail was pleasantly varied by a collation served on board, at which several addresses were made by members of the Association and other invited guests.

THIRD DAY'S SESSION.

On the third day the only topic discussed was the "Best mode of painting over old paint." This called out many experiences. Mr. Legreo used a solution of hartshorn and water, scraping as the paint softened. He had tried sandpapering, but the cracks would show very soon.

Mr. Stow experienced great difficulty on account of blistering, but remedied the evil by a coat of oil-dryer and "turps," mixed, letting it stand six or eight days, which raised the blisters. He rubbed the old varnish down close, and gave it a coat with half-and-half oil and "turps;" when there were old cracks he would give the car a scraping.

Mr. Will deprecated the use of water, as it would dry out. He killed the varnish with an alkali and then rubbed it down, but it cost almost as much as to burn it off.

Mr. Cooley did not approve of painting over old paint, and when he did this always called it revarnishing. Some cars thus repainted stood better than others, but he had given up the idea of doing a good job in this way.

Mr. Bradley used caustic soda to remove the old varnish and followed up with lump pumice stone, then adding a thin coat of varnish, a coat of flat color and three coats of finishing color. Blistering was not always the fault of the painter. He had opened blisters from which the water ran out, the trouble being in the use of green lumber, from which the sun drew the dampness.

Other members followed, generally expressing the opinion that the practice of painting over old paint should be abandoned as rapidly as possible.

President Robertson offered some practical suggestions concerning the best methods of extending the usefulness of the Association.

The Secretary was authorized to subscribe for 50 copies of the *Painter's Magazine*.

It was decided to hold the next annual meeting in St. Louis, and Messrs. Forby, Baldwin and Bradley were appointed a committee of arrangements.

Messrs. McKeon, Stines and Cooley were appointed a committee to select subjects for discussion at the next annual meeting, and after adopting resolutions of thanks to those instrumental in entertaining the members during their stay in the city, the meeting adjourned.

In the afternoon the members were taken in carriages to the chief points of interest in and about the city, and also inspected the Michigan Central car shops at Grand Trunk Junction, before dispersing to their homes.

For our summary of the proceedings we are chiefly indebted to the excellent reports made by the *Detroit Post and Tribune*.

New York Legislative Investigation of Railroad Practices.

The sub-committee of the Railroad Investigation Committee of the New York Assembly appointed to investigate the Delaware & Hudson Canal Company completed its work during Wednesday, Thursday and Friday of last week.

Wednesday the General Freight Agent of the Company, Mr. H. S. Marcy, was examined. He produced papers which stated the special rates given on his road. The company had no printed tariff of special rates, but only a written one. The tariff on the Susquehanna Division had not been changed since 1874. All factories in the same business have the same special rates. He promised to furnish a copy of the written tariff. For new business special rates were made for a specified time. The system of special rates had been in force on the road for 18 or 20 years. No notice that special rates are given is made at stations. He thought it would take one man six months to ascertain from the books what proportion of the business of a year was done at special rates. His road carried oil, in connection with the Erie, from Cleveland to Albany, for 50 cents a barrel, getting about 29 per cent. of the freight for the haul from Binghamton to Albany. When the rate was \$1.00 from Cleveland to Albany he thought the rebate was 45 cents. He did not fix coal rates. Mr. Dickinson (the President) did that. He supposed that the reason why the coal rate at Saratoga and Ballston was \$5, and to Whitehall and other places more distant only \$3.50, was because of the competition of the canal. He had never had any instructions as to special rates; he had learned that it would be impossible to do business without them. The company could not make anything if all its business was done at special rates. He had no idea what volume of increased traffic would reduce the per centage of expenses. Special rates were granted only on the application of the shipper, and they tried to have them conform to the rates given other shippers under similar circumstances. On milk they charged 20 cents a can to Albany and 25 to New York; a full can weighs 100 pounds.

Mr. Marcy's examination was resumed Thursday. He brought records of rebates paid on freight. He said that the milk rate covered the return of the can. Mr. Vilas, General Freight Agent of the Erie, makes special rates over the Delaware & Hudson's line from points west of Binghamton to Albany and Troy. Mr. Goodman, of the New York Central, makes them from New York to Rutland and Montreal. They did not attempt to build up any jobbing trade except for manufacturers on the line. He mentioned several firms that had special rates. He had carried grain from Binghamton to Albany and Schenectady for their proportion (about 14 1/2 per cent.) of a 15-cent rate from Chicago. It did not pay them. Last year the rate was scarcely ever more than 20 cents from Chicago to Albany, out of which his road received 3 cents.

Friday Mr. Wm. Gilbert, President of the Troy Car Works, was examined as to the price of cars. He gave the following: box cars now \$400 to \$450; milk cars, about \$100 more; baggage cars, \$2,000 to \$2,200; drawing-room cars, \$8,000 to \$12,000. For sleeping cars made for Mr. Wagner in 1874, his works received \$13,000. They had built 25 cars for the New York Elevated road from \$2,500 to \$3,000 each. Ordinary passenger cars now are worth about \$4,200 each.

Mr. Thomas Dickinson, President of the Delaware & Hudson Canal Company, said he had been connected with his company 20 years. It owned a gravity railroad and a canal from the coal regions. It leased the Albany & Susquehanna Railroad in 1870. It, with a short extension which his company built, and running rights over the Jefferson Railroad, for which it had a contract, gave it a continuous line from its coal mines to Albany. In 1871 it leased the Saratoga Division & Whitehall, and in 1873 it built the New York & Canada road. The rate on coal over its road used to be 2 1/2 cents a mile, but does not average more than 1 1/2 now. It charges 1 1/2 cents per mile to Saratoga, but only 1 cent to Whitehall, because of the competition at the latter place. He thought the company would make more money if they hauled all the coal on to Whitehall than they do by stopping a train at Saratoga to deliver part of it there. In New York Harbor less was asked for coal than at the mines. They had been doing a benevolent business for two or three years because they were compelled to. The railroad from Whitehall to Canada was a little ahead of the times. He had noticed that the reports to the State Engineer do not give much information. They could be simplified very much and give better information. He thought the report ought to contain a balance sheet. He believed in the desirability of special rates. If the railroad companies of New York were compelled to publish their special rates, and all the variations in them, it would ruin their business and that of New York, and put it into the hands of competitors outside of the state; he did not see any objection to a general law governing all the states.

Mr. Dickinson explained coal combinations, which he considered justifiable. He thought that if he were to begin over again the business he is in, he would not have a mile of railroad as his property, as there were so many lines in competition against him.

New York Railroad Suggestions.

The Committee on Railroad Transportation of the Chamber of Commerce has addressed the following letter to Presidents Vanderbilt, of the New York Central, and Jewett, of the New York, Lake Erie & Western Railroads:

CHAMBER OF COMMERCE, New York, Sept. 17, 1879.
W. H. Vanderbilt, Esq., President New York Central & Hudson River Railroad Company:

DEAR SIR: The undersigned have reason to believe that the Presidents of the Pennsylvania Central and the Baltimore & Ohio Railroads entertain the opinion that proper congressional legislation, connected with the appointment by act of Congress of railroad commissions to regulate interstate communication, in the matter of freights, either by railroads or by rail and water transportation combined, would be of essential service both to the

railroads and to the general public, and they are glad to notice from the report of the Legislative Committee on Railroad Investigation that you entertain a similar opinion. The committee, therefore, suggest that the presidents of the trunk lines should cause to be prepared for presentation to Congress at its next session, a bill designed to accomplish this object. They further suggest that the bill, when prepared, should be presented for criticism to the representative commercial bodies in the several cities on the sea-board who are directly interested in the matter. If this plan should be concurred in, and a mutual agreement be arrived at, the benefits would be obvious. This committee beg leave distinctly to state that they desire neither state nor congressional legislation which shall not, while protecting the public, be also just to the railroads. This committee are also of the opinion that the public will justly demand both state legislation to regulate local traffic and congressional legislation to regulate the through traffic, and that to this end it is desirable that the representatives of the trunk lines, and of the people, should work in harmony. Begging the favor of an expression of your views in reply, we remain your obedient servants,

Charles S. Smith, Benjamin B. Sherman, Jackson S. Schultz, Francis B. Thurber, Jacob Wendel, B. G. Arnold, C. C. Dodge, Special Committee of the Chamber of Commerce.

At the monthly meeting of the Board of Trade and Transportation in New York, Sept. 17, the following resolution was unanimously adopted:

"Whereas, The disclosures that have thus far been made through the labors of the Railroad Investigating Committee have revealed an amount of corruption and unjust discrimination against our city and state, as well as against individuals, that, unless promptly remedied, must inevitably prove disastrous to our commercial, agricultural and other interests; therefore,

"Resolved, That a committee of five be appointed, with power to confer with similar committees appointed, and that may be appointed, by the various commercial, agricultural, and manufacturing organizations throughout the state, for the purpose of taking such steps as in their wisdom may be deemed necessary to secure the election in November next of those who are known to be in accord with the people in their efforts to obtain their rights at the hands of the railway companies."

The Chairman appointed Messrs. Charles Watrous, D. R. James, H. K. Miller, R. F. Austin and Ambrose Snow. A long and interesting communication was received from the Hon. Richard P. Morgan, Sr., the famous retired constructing engineer, detailing a scheme for a new freight railroad from New York to the Mississippi River. Mr. Morgan says he can satisfy any responsible body of gentlemen of the existence of a route between these points where the grade does not exceed at any point more than 20 feet to the mile, whereas the average grade on the New York Central route, which has a great advantage over all the other trunk lines in that respect, is 40 feet to the mile. Mr. Morgan shows, by recorded statistics, that a first-class locomotive able to drag 437 tons up a 40-foot grade has a capacity for 725 tons on a 20-foot grade, and argues from this that the capacity for transportation of the proposed road would be double that of the New York Central, at the same expense. He furnishes figures of the probable cost of building, grading, equipment, right of way, etc., his estimate being that a double-track road of the length, required with the fullest and best equipment, depots, stations, etc., would not necessitate the expenditure of more than \$40,000 per mile, or less than \$40,000,000 in all, whereas the present trunk lines are capitalized at a very much higher figure. The communication was referred to the Committee on Railroad Transportation.

Why the Light Went Out.

Next time you go out on the Michigan Central road take a seat on the right-hand side of the car, so that you may notice, about ten miles down the road, a little old red farmhouse. The curtains will be down, the doors shut and rank weeds and tall grasses will meet the flying glance in the front yard. A month ago old Nan Rogers lived there; to-day the place is in the keeping of rats and mice and desolation. The old woman was a widow and childless. If she had a relative anywhere in this great world, those who buried her were not aware of the fact. She lived all alone, having only a bit of land and being aided by kind neighbors to raise enough to supply her wants. Seven or eight years ago, when her last child left home to meet a violent death on this same road, the men of the rails became interested in that quaint old farm-house. One night they saw a bright light in one of the windows. Its rays streamed out over the flowers and fell upon the rails along which the wheels thundered, and the engineer wondered over the signal. The lamp was there the next night, and the next, and it was never missed for a single night until one evening a month ago. Old Nan, deprived of husband and children, made friends with the rushing trains and their burdens. The train-men soon found that the lamp was for them, and they watched for it. During the early evening hours they saw old Nanny's face behind the light or at the door, and a thousand times conductors, engineers and brakemen have called cheerily through the darkness:

"Good night, old Nanny—God bless you!"

Winter and summer the light was there. Winter and summer the train-men looked for it, and the more thoughtful ones often left a bit of money with the station men beyond to help the old woman keep the bright rays shining. The lamp was not there for one train, but for all, and all men understood the sentiment and appreciated it.

One dark night not long ago, when the wind howled and the raindrops beat fiercely against headlight and cab, the engineers missed the signal-light. They looked for it again and again, as one suddenly misses an old land-mark in a city, and when they failed to find it the hand instinctively went up to the throttle, as if danger lurked on the curve below. Each train-man aboard that night looked for the signal, became anxious at its absence, and made inquiries at the stations above and below. Next day men went down to the little old house, fearing old Nanny might be ill. There sat the lamp on the window sill, but the oil was exhausted. In her bed, seeming to have only fallen asleep, was the poor old woman, cold and dead. Life and lamp had gone out together, and men of rough look and hardened heart replied as they heard the news:

"Poor old woman! May her spirit rest in Heaven!"—*Detroit Free Press*.

More Fast Time.

The Erie Express left the Union Depot yesterday morning twenty minutes late, and it was desirable to make up the lost time as quickly as possible. After leaving Sewickley the engineer, Jimmy Robinson, let his engine go. The distance from Sewickley to Rochester is thirteen miles, and the run was made in just fourteen minutes. The lost time was nearly made up when the train reached Rochester. This is said to be the fastest time ever made on the road.—*Pittsburgh Telegraph*, Sept. 16.



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addressees.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN OPINIONS, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE COTTON CROP OF 1878.

The *Commercial and Financial Chronicle* of last week published its usual elaborate and trustworthy annual review of the movement of cotton during the crop-year ending with August last, which will serve as the basis of what we shall have to say here. Though most American railroads are very little affected by this staple, there is a very large district, including a large number of important railroads, in which this crop and the price received for it determine substantially whether the season shall be prosperous or the reverse to merchants, carriers and mechanics, as well as to planters. It is not nearly so large in bulk as many other staples of which much less is said; but it is valuable in proportion to its bulk, and it is transported immense distances, and usually bears, or rather is able to bear, a remunerative rate. To the railroads in the cotton country it is as important as the wheat crop in Minnesota is to the railroads of that state, and much more so than any one grain crop is to the roads in most of the other Western states.

There are not, however, the same reasons for following closely the production and movement with cotton as with grain, because there is a great extension in grain production and great fluctuations in its movements, and comparatively little change in cotton. We show to-day, for instance, that the grain receipts of Atlantic ports increased about 50 per cent. within two years. Nothing like this has ever taken place in the cotton business, except when caused by war.

The *Chronicle's* records show the production, in bales, to have varied only between 1,050,233 tons and 1,200,103 tons during the past four years,

the largest crop being but 14½ per cent. more than the smallest. Perhaps the fluctuations in the grain crop are not greater than those in the cotton crop, which is liable to many enemies, and more affected than most other crops by the weather, and for a longer time of the year—it being usually ten months from the time of planting or preparing for planting until picking is finished. But substantially the whole cotton crop is marketed, and passes through the hands of merchants and carriers, and is transported long distances; while most of the grain is consumed on the farm or near by—by far the larger part of the corn and oats, and probably one-half of the wheat also.

The crop of the past four years will be found given at the foot of the following columns giving the receipts, in bales, at each of the shipping ports, the movement over land (by rail) directly to the Northern mills, and the Southern consumption, as given by the *Chronicle*:

	1876.	1877.	1878.	1879.
Louisiana.....	1,415,959	1,195,035	1,391,519	1,187,365
Alabama.....	374,672	360,918	419,071	362,408
South Carolina.....	416,372	408,024	450,980	507,021
Georgia.....	524,825	491,800	604,670	704,752
Florida.....	488,640	506,624	461,821	562,118
Texas.....	17,434	23,080	21,818	56,718
North Carolina.....	107,836	138,037	150,505	135,815
Virginia.....	529,126	575,941	513,985	568,383
New York.....	198,063	121,213	145,412	147,808
Boston.....	71,306	100,208	110,962	108,996
Philadelphia.....	36,826	45,218	52,861	61,323
Baltimore.....	6,297	7,871	13,563	20,611
Portland.....	3,090	4,105	8,440	3,960
Total receipts at ports	4,191,142	4,038,141	4,345,645	4,447,276
Shipped direct to mills	333,146	300,282	317,620	474,255
Manufactured South	145,000	147,000	148,000	152,000
Total crop.....	4,009,288	4,485,423	4,811,265	5,073,265

Louisiana receipts are all at New Orleans, and Alabama receipts all at Mobile. South Carolina receipts are nearly all at Charleston, a small amount going to Port Royal. Still fewer bales of the Georgia receipts go to Brunswick; nearly all to Savannah. In Texas something like 22,000 bales last year went to Indianola, the rest, or 97 per cent of the whole, to Galveston. In Florida the small receipts are chiefly at Fernandina, in North Carolina almost wholly at Wilmington. In Virginia about 115,000 bales appear to have been received at Richmond, and thence shipped by steamer, the rest going to Norfolk.

The percentage of the total ports' receipts at each state's ports has been as follows for the four years:

	1875-76.	1876-77.	1877-78.	1878-79.
Louisiana.....	30.3	26.7	28.9	23.4
Alabama.....	8.0	8.0	8.7	7.1
South Carolina.....	8.9	10.4	9.4	10.0
Georgia.....	11.2	10.9	12.6	13.9
Texas.....	10.5	11.3	9.6	11.5
Florida.....	0.4	0.5	0.4	1.1
North Carolina.....	2.3	3.1	3.1	2.7
Virginia.....	11.4	12.9	10.7	11.2
New York.....	4.3	2.7	3.0	2.9
Boston.....	1.5	2.2	2.3	2.2
Philadelphia.....	0.8	1.0	1.1	1.2
Baltimore.....	0.1	0.2	0.3	0.4
Portland.....	0.1	0.1	0.2	0.1
Total to ports.....	89.8	90.0	90.3	87.7
Shipped direct to mills.....	7.1	6.7	6.6	9.3
Manufactured South.....	3.1	3.3	3.1	3.0
Total.....	100.0	100.0	100.0	100.0

Consolidating the ports in three groups, we have:

	1876.	1877.	1878.	1879.
Gulf ports.....	48.8	46.0	47.2	42.0
South Atlantic ports.....	34.2	37.8	36.2	38.9
North Atlantic ports.....	6.8	6.2	6.0	6.8

The effect of the yellow fever is seen on the business of New Orleans last year, but generally it has held its own pretty well. That the Galveston receipts have not grown more is due to the fact that the increased production of Texas is largely marketed by rail to the north or down the Red River to the southeast. The completion of rail connection between Houston and New Orleans is likely still further to divert shipments from Galveston, which may still keep up its business or increase it, but, as before, only because the production of the state grows rapidly. The only well-marked tendency is to the increase of receipts at the South Atlantic ports, which receive by rail from distant places, and ship north both by rail and vessel and to Europe by vessel. The supply of the northern manufacturers comes more largely from these ports than from any others. Thus, last year, of the 2,131,891 bales received at Gulf ports, only 414,425 were shipped to Northern markets; but of 1,972,687 bales received at South Atlantic ports 829,066 were shipped north. The other part of the Northern supply comes directly from the interior, and this part last year was larger than that obtained from Gulf ports. It is natural that the ports most distant from Northern manufacturers should export chiefly; and this they do. New Orleans exports are nearly six and a half times its shipments to United States ports. Its exports, indeed, are usually somewhat greater than its receipts from the interior, as it receives considerable quantities from Mobile and Galveston, not counted in its original receipts, because they have already been counted at the ports where they are received from the interior.

The distribution of the exports, therefore, is not like that of the receipts. It is further changed by the fact that a considerable amount of the cotton sent north is exported from northern ports and not manufactured. This, however, is a decreasing rather than increasing proportion. The proportion of the total exports shipped from each port is given in the following table:

	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
New Orleans.....	45.4	44.0	40.4	37.1	41.9	39.5	43.4	35.9
Mobile.....	7.0	5.0	4.7	4.9	7.5	7.2	4.9	3.6
South Carolina.....	5.7	6.0	8.7	10.2	8.7	11.1	9.1	10.9
Georgia.....	15.1	14.0	15.1	15.7	11.3	9.8	10.6	13.3
Texas.....	5.9	7.8	9.7	8.9	7.3	8.5	6.7	10.2
Florida.....	.....	.....	.....	.....	.....	.....	0.2	0.5
North Carolina.....	.....	.....	0.2	0.6	0.9	1.2	1.7	2.0
Virginia.....	0.2	0.3	0.7	2.5	3.3	4.0	4.8	5.9
New York.....	10.0	21.4	17.1	16.6	15.2	14.2	12.0	10.7
Boston.....	0.7	0.4	0.9	1.4	1.8	2.5	3.8	3.6
Philadelphia.....	.....	.....	1.0	1.0	1.2	1.0	0.8	0.7
Baltimore.....	0.7	0.7	1.5	1.7	0.9	1.0	1.7	2.7
Other ports.....	0.3	0.4	.....	.....	.....	.....	0.3	.....
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Considering the effect of the yellow fever last year, we may say that New Orleans does not show any marked tendency either to fall or rise in its rank as the chief cotton-exporting market. But Mobile seems to fall. Charleston rather gains. Savannah did much better last year than in any of the three preceding, but not so well as in the four ending with 1875. Galveston has fluctuated a good deal; last year's exports were its best, but its rank was nearly as high as far back as 1874. Norfolk gains steadily and quite rapidly. Five years ago its exports were hardly worth counting; last year it was sixth in the list, with nearly twice as much business as Mobile. New York's rank as an exporter has fallen steadily since 1873. Always before, it has ranked next to New Orleans; this year, Charleston and Savannah are above it and Galveston nearly equal to it.

If we consolidate the exports into three divisions, one including the Gulf ports, another the South Atlantic ports (Norfolk to Fernandina), and the third the North Atlantic ports (Baltimore to Portland), we will find the percentages to have been as follows:

	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Gulf ports.....	58.3	56.8	54.8	50.3	56.7	55.2	55.0	49.7
South Atlantic.....	21.0	20.3	24.7	29.0	24.2	26.1	26.4	32.6
North Atlantic.....	20.7	22.9	20.5	20.7	19.1	18.7	18.6	17.7

The Gulf ports have not varied greatly except when their business has been interrupted by yellow fever. For the seven years before last, they averaged 55.3 per cent. of the total exports. The South Atlantic ports have gained on the whole, aside from the advantage of the trade thrown upon them last year by the misfortunes of New Orleans, and their gain has been at the expense of the North Atlantic ports, or rather, of New York, for all but New York have gained.

Comparing 1879 with 1878, there has been a decrease in the exports of New Orleans, Mobile, New York and Boston, and an increase in the exports of all the other ports. The greatest gain was at Texas ports (nearly all at Galveston), being 57 per cent. The increase at Savannah was 31½ per cent., at Charleston 21½, at Norfolk 27½.

The proportion of the crop consumed in the United States has varied very little from year to year—only between 30 and 32 per cent. in six years; in which the average has been 31.05 per cent.

One of the most interesting features in the cotton movement is the business done at interior markets, which collect and afterward send either to sea-ports or direct to the mills. The most important of these are Memphis, St. Louis, Cincinnati, Augusta, Ga., Montgomery and Selma, Ala., each of which last year received more than a hundred thousand bales. Nineteen places named in the *Chronicle's* tables received altogether more than 2,000,000 bales in each of the two last years. The effect of the yellow fever is seen most at Vicksburg, whose receipts fell from 171,347 bales in 1878 to 37,631 in 1879; Memphis falling off only about 7 per cent. The places whose trade has grown fastest have had the following receipts for seven years:

	Montgomery.	Selma.	Rome.	St. Louis.	Cincinnati.
1872.....	82,645	46,991	.....	50,709	137,575
1873.....	33,919	60,006	.....	103,767	195,895
1874.....	59,319	75,361	27,138	194,031	151,980
1875.....	72,727	88,506	32,051	245,031	185,376
1876.....	67,337	69,350	33,100	219,010	175,527
1877.....	106,284	92,681	48,166	246,674	184,895
1878.....	132,387	100,609	62,133	332,437	248,069

St. Louis this year handled 6½ per cent. of the whole crop, and Cincinnati nearly 5 per cent. Memphis had, but one-sixth more receipts than St. Louis last year, though in 1872 it received eight times as much. Nearly all the cotton that comes as far north as St. Louis and Cincinnati goes to the East by rail.

The crop of 1878 was the largest on record. That of the present year seems hardly likely to turn out so well. The weather has been more unfavorable in most of the cotton states; but there has been no great disaster to the crop, and there was probably some increase in the area planted, so that, with favorable weather hereafter, the crop may be large, if not so large as last year.

THE MARKETS FOR NEW YORK MERCHANDISE.

Since June, 1877, when the trunk-line apportionment of west-bound freight from New York went into effect, exact accounts have been kept of the shipments of every class of goods by every route to every competing point. The trunk lines do not carry all the freight shipped from New York to Western cities, but they carry by far the greater part of the merchandise. The canal carries a great deal of coarse freight, like coal, salt, pig-iron, etc., and a very considerable amount of some kinds of merchandise, especially during three years past. A little, too, goes by steamer to the Chesapeake & Ohio Railroad and other more circuitous routes, but the great bulk of the merchandise of considerable value goes by the trunk lines.

The local traffic not being divided, no record is kept of that for the combination, but the shipments include nearly all that goes to Buffalo, Pittsburgh, Wheeling, Parkersburg, and points further west in the United States and in Canada west of Toronto, this being business for which the trunk lines compete. Shipments to points on the Pacific coast, where there is competition

Western Canada.....	47,124.65	3.26
Buffalo.....	59,522.22	4.11
New York.....	9,519.86	0.68
Pennsylvania.....	21,568.50	1.49
Ohio.....	118,290.03	8.19
Columbus.....	14,812.55	1.02
Indiana.....	60,121.88	4.16
Indianapolis.....	26,654.35	1.84
Cincinnati.....	107,212.45	7.41
South of Ohio River via Cincinnati.....	3,867.89	0.27
Louisville.....	34,541.41	2.39
South of Ohio River via Louisville.....	14,644.71	1.01
Nashville.....	2,521.65	0.17
South of Ohio River at Evansville and Cairo.....	871.50	0.06
Pittsburgh.....	101,362.12	7.01
Wheeling.....	11,928.91	0.82
West Virginia.....	357.37	0.03
Parkersburg.....	2,565.40	0.18
Grand total.....	1,446,606.06	100.00

* For 15 months this was included with south of Ohio via Louisville.

In this table, freight shipped *through* a place is not included in its consignments, unless it is so indicated.

The "Northwest" included with Wisconsin is Minnesota and Manitoba. "Points west of Missouri

Parkersburg, New York (state), Pennsylvania, and West Virginia; 23.30 per cent. went to places in Ohio; 3.26 per cent. to Canada west of Toronto; 7.08 to Michigan; 6 to Indiana; 22.16 to Illinois (besides what little went to the "Mississippi River point" Quincy); 6.27 to Wisconsin and Minnesota; 6.35 to St. Louis, and 7.48 to all other points west of the Mississippi. The other 3.90 per cent. went to Louisville and other places south of the Ohio.

Of the whole, 57.74 per cent. was to points east of Chicago (including those south of the Ohio), 28.43 to Chicago and points west as far as the Mississippi, and 13.83 per cent. to the Mississippi and points beyond. Three-eighths (37.44 per cent.) was to towns on the great lakes, and nearly a fifth (19.32 per cent.) to places on and south of (chiefly on) the Ohio River.

As to the different cities to which shipments are made, none can bear any comparison to Chicago. More than three times as much was shipped from New York to it by the trunk lines in these two years as to St. Louis. Cincinnati and Pittsburgh also rank above St. Louis.

P. e.	Tons.
0.21..Parkersburg and W. Va.	2,983
0.82..Wheeling.....	11,929
7.01..Pittsburgh.....	101,362
1.49..Pennsylvania.....	21,569
0.66..New York.....	9,520
4.11..Buffalo.....	59,522
3.26..Western Canada.....	47,125
4.34..Detroit.....	62,968
2.74..Michigan.....	36,021
4.60..Cleveland.....	66,498
1.96..Toledo.....	28,710
8.19..Ohio.....	118,290
1.02..Columbus.....	14,813
7.41..Cincinnati.....	107,212
2.39..Louisville.....	34,541
1.51..South of Ohio R.....	21,006
1.84..Indianapolis.....	26,654
4.16..Indiana.....	60,122
19.25..Chicago.....	378,465
2.91..Illinois.....	42,367
1.10..Miss. River Points.....	17,108
3.02..Milwaukee.....	43,712
3.25..Wisconsin and N. W.....	46,907
1.62..Iowa.....	23,410
6.35..St. Louis.....	91,742
0.22..Missouri.....	3,187
1.86..Mo. River points.....	28,914
2.04..West of Mo. River.....	29,441
0.55..Ark., La., Tex. and Ind. Ter.....	8,018

DIAGRAM SHOWING DESTINATION OF TRUNK LINE FREIGHT SHIPMENTS FROM NEW YORK FOR THE TWO YEARS ENDING WITH JUNE, 1879.

by sea, however, are not included, these being divided on a different basis and by an earlier agreement.

The quantities of the shipments to different places, therefore, show very well the relative importance of the markets for New York merchandise, and, doubtless, to a considerable extent, the relative importance of Western cities as distributing markets for merchandise, since all of them get their chief supplies of most foreign and eastern goods at or through New York.

The number of tons and the percentage of the total shipped to different places or districts under the trunk-line agreement during the two years ending June 30 last were as follows:

Statement showing the Distribution of Tonnage of West-bound Freight from New York City for 24 months ending June 30 1879.

Destinations.	Tons.	Per cent.	Tons.	Per cent.
Chicago.....	278,453.22	19.25		
Milwaukee.....	43,712.03	3.02		
Wisconsin and North-west.....	46,906.81	3.25		
Iowa.....			23,410.45	1.62
Missouri River points.....			28,913.56	1.86
Points west of Missouri River.....			8,969.09	0.63
Northwest of Missouri River.....			11,418.65	0.79
West and southwest of Missouri River.....			9,023.57	0.62
Mississippi River points.....			17,108.13	1.19
Illinois.....			42,367.41	2.91
St. Louis.....			91,742.32	6.35
Missouri.....			3,186.50	0.22
Arkansas, Texas, Louisiana and Indian Territory.....			8,012.77	0.55
Cleveland.....			66,497.57	4.60
Detroit.....	62,937.58	4.34		
Toledo.....	28,710.44	1.98		
Michigan.....	37,577.15	2.60		
Port Huron.....	2,044.07	0.14		
			131,269.24	9.08

River" include everything west of Missouri River points and Minnesota (including Dakota east of the Missouri River) and north of Indian Territory. The figures for these are for nine months, from July 1, 1877, to Feb. 28, 1878. For the fifteen months following, this traffic was kept under the two following heads: "Northwest of Missouri River," including points north of Kansas and Colorado and west of Minnesota, every competing point reached by the Pacific railroads except Colorado and the Pacific points, and "West and Southwest of Missouri River," including Kansas and Colorado and west of Minnesota, the districts supplied by the Pacific railroads except Colorado and the through Pacific business—being territory to which freight goes exclusively by way of Chicago; and "West and Southwest of Missouri River," in which are Kansas, Colorado and New Mexico, for whose freight the roads south of Chicago compete with the roads through Chicago. The entire traffic to points west of Minnesota and the Missouri River and river points was, therefore, 29,441.31 tons, and 2.04 per cent. of the whole. "Missouri River points" are Kansas City, Leavenworth, Atchison and St. Joseph; "Mississippi River points" are Burlington, Keokuk, Quincy and Hannibal—the railroad crossings above St. Louis and below Rock Island.

It appears from this that one seventh of the whole freight (14.30 per cent.) was consigned to the Western termini of the trunk lines, or points close by—that is, what is included under Buffalo, Pittsburgh, Wheeling,

The quantities and percentages of all cities to which as much as 1 per cent. of the whole freight was sent in the two years are as follows:

	Tons.	Per cent.		Tons.	Per cent.
Chicago.....	278,455	19.25	Buffalo.....	59,522	4.11
Cincinnati.....	107,212	7.41	Milwaukee.....	43,712	3.02
Pittsburgh.....	101,362	7.01	Louisville.....	34,541	2.39
St. Louis.....	91,742	6.35	Toledo.....	28,710	1.98
Cleveland.....	66,498	4.60	Indianapolis.....	26,654	1.84
Detroit.....	62,938	4.34	Columbus.....	14,813	1.02

Nearly two-thirds of the total (63.32 per cent.) was shipped to these eight places.

These figures measure only the importance of the several places as customers for New York merchandise. Doubtless all the places get most of their supplies of foreign and Eastern-made goods at or through New York, but doubtless what they get at other places, as at Baltimore, Philadelphia and Boston, is not divided in the same proportion. Cincinnati and St. Louis, for instance, may be supposed to get a larger proportion of their supplies in Baltimore than Chicago does, and the northern cities more in Boston than those further south. For a few months statistics have been kept of the shipments of all these cities, but not for the two years above included. A more important matter to consider in estimating the importance of the places as distributing markets is the vast quantity of articles manufactured at interior points which the Western cities sell. Iron goods from Pittsburgh and Cleveland, manufactures from Pennsylvania and Central New York, to say nothing of the places further west, do not form trunk-line competitive freight. The vast sales of agricultural implements,

wagons, wooden ware and furniture in Western cities are almost wholly the product of Western manufacturing.

The value of a traffic is not always in proportion to its bulk; that depends upon the proportions that belong to the different classes of freight—whether first-class at 75 cents per 100 lbs., or fourth class at 40 cents, makes a great difference.

Probably there will be more surprise at the small amount of the shipments to certain much-talked-of places than at the large amount of the leading traffic centres. We have heard a great deal this year about "Missouri River points," and at times the rates on half the west-bound traffic were threatened by contentions concerning the business of these points. But we see that the total shipments by all routes to these points from New York for two years were only 32,601 tons, which is an average of but 43 tons daily, and this divided among the six routes west of Chicago and St. Louis that compete for it would give them less than a car-load a piece. The gross receipts of the trunk lines from this business is probably less than \$70,000 a year.

It will be a mistake to suppose that the merchandise business of the far western places, or of most of the small interior places, for that matter, is measured by or even in proportion to their receipts from New York. These places receive their supplies largely from the large interior cities, such as Cincinnati, St. Louis and Chicago, but of course all such business is counted also, and first, with that of the city which supplies them. This must be considered especially in connection with the business of Missouri River points. Their traffic is not trifling, but is important to the roads between them and Chicago and St. Louis. It is only the through consignments from New York that are comparatively trifling. Probably the shipments of lumber alone from Chicago to these places are ten times as great daily as the New York shipments of all freight.

The total shipments for the two years having been 1,446,610 tons, the average per working day was 2,311 tons, which would make 231 car-loads, and seven or eight full trains—all easily dispatched by a single road within three or four hours, when there is nothing else in the way. Now the rail receipts of grain and flour alone at New York, even allowing 12 tons to the car-load, in 1878 amounted to nearly 2,000,000 of tons, and to 618 cars per day. All the grain cars and all the cars carrying provisions are fit for carrying merchandise.

To show more clearly the relative amounts of shipments to different destinations we present them graphically, with lines to the left of an ordinate whose lengths are in proportion to the tonnage shipped to the destination named after (to the right) of the line. The destinations are arranged from top to bottom about in their geographical positions from east to west. When shipments are classed under the name of a state and not under that of a city, the state includes all shipments to places in it not given separately. There are many such places of some importance in Ohio, several in Indiana, a few in Illinois, but very few indeed in Missouri. This explanation will suffice to make the diagram perfectly clear, doubtless, and it sets forth the relative importance of the various markets for the goods sold in New York to Western consumers with an emphasis that cannot be obtained by tables of figures, and makes possible a comparison at a glance.

The Effect of Rail Rates to the East on the Grain Business of Lake Ports.

The bulk of Chicago shipments has been reduced considerably since the advance from 25 and 30 to 30 and 35 cents per 100 lbs. on fourth-class freight and grain, and this has been urged in Chicago as evidence of the impolicy of the advance. But the first week after the advance the shipments were not small but unusually large, and this was due, probably, to carrying on unexpired contracts not at 25 cents but at very much lower rates. It is certainly no disadvantage to the railroads to have such business fall off entirely. For the week ending Aug. 30, 33,808 tons were shipped eastward from Chicago, the next week 27,449 tons, and for the week ending Sept. 13 the shipments were 25,349 tons. Now, if at a 25-cent rate the business of the last week would have been as great as that of the first week, it would have produced at the grain rate (three-fourths of the freight is grain or flour) \$169,040, against the \$152,024 yielded at the current 30-cent rate. Thus there would have been an addition of less than \$17,000 for carrying 8,459 more tons of freight, which would not pay the additional expense unless that is less than 0.22 cents per ton per mile. But further evidence that profitable business has not been driven away by the advance in rates is given by the fact that lake shipments have not increased and lake rates have not advanced. And for Chicago and Milwaukee themselves, it is doubtless better that the rail rates should be high, at least as long as navigation is open, and if corresponding railroad rates are maintained from other places, than that they should be low. When rail rates are very low, there is no advantage in shipping to a lake port,

but there is when they are high. With rail rates as high as they used to be, pretty much all the grain of Southern and Central Illinois, of Missouri and Kansas, as well as of the country further north, would go to Chicago or Milwaukee to be sold and shipped by lake. Nothing so threatens the supremacy of these great grain markets as very low rail rates, which take the grain past them or through them and not to them. There has been a vast increase of this through movement of late years, and the growth of grain business at the Western cities is nothing like as great as that of the whole grain movement. Chicago receipts, for instance, were larger in 1873 than in any succeeding year until 1878, while at the same time the receipts of the Atlantic ports went on increasing with but slight interruptions and have been larger in every year since than in 1873. The totals in millions of bushels have been for Chicago and Milwaukee, the seven Atlantic ports and the excess of the receipts at Atlantic ports over those at Chicago and Milwaukee, as follows:

Year.	Chicago.	Milwaukee.	Chicago and Milwaukee.	Atlantic ports.	Latter over former.
1873.....	100	39	139	189	50
1874.....	97	38	135	206	71
1875.....	82	39	121	194	73
1876.....	99	34	133	228	95
1877.....	96	34	130	220	90
1878.....	136	39	175	312	137

Because these cities have about maintained their business and in the last year have greatly increased it, and because they remained indisputably at the head of the Western grain markets it has quite generally escaped attention that, relatively to the total grain movement, they have decreased in importance materially. The proportion of grain that goes by them becomes a larger and larger proportion of the whole. In 1873 the receipts of the two Lake Michigan cities were equal to 74 per cent. of the receipts of the Atlantic ports; since that year the percentage has been, successively, 66, 62, 58, 59 and 56 per cent. Something of this may be due to a larger production in Kansas and elsewhere far south of the latitude of Chicago, from which the route to the East by Lake Michigan is circuitous, but the chief cause has been the reduction of through rates by rail, which for a large part of the time have been so low that there was no economy in shipping by lake, with the transfer charges at each end of the route, though lake freights have been low without precedent.

The conclusion is that the lake cities, like New York and Montreal, have their grain business increased by high rail rates, because such rates give them the advantage of a cheaper route to the seaboard than any of the inland cities of the West or Atlantic ports served only by rail can have, whereas low rail rates put the inland cities and country stations on an equality with the great markets that have water routes.

It is quite possible that rail rates hereafter may be higher, on the average—that the roads will not carry for cost or less than cost, as they have done for a large part of the time during the past few years. But we may be sure that a very large part of the grain will continue to go by rail if rates leaving a very slight margin above cost will attract it. Philadelphia and Baltimore, which now have a very large business, depend wholly on rail grain, or lake-and-rail grain, and there are many roads which could get scarcely any share of the traffic if through rates were such as to turn the grain to the lakes. These roads will not give up the business if they can make any profit on it, and if they can't make ten cents or five cents per 100 lbs. they will accept one cent over the cost of hauling. But reasonable prices never below cost will probably give the lake cities a larger proportion of the business than they have had heretofore, a smaller proportion going through by rail, but a larger profit being made from it.

The Road-Masters' Convention.

The chief criticism to be made of the proceedings of the meeting of road-masters at Niagara Falls last week is that there was not enough of them. Fault is to be found not so much with what was done as with what was not done. The attendance was fair, but hardly what might have been expected, and not at all what it ought to have been, and doubtless would have been did not some of the railroad managers under whose direction the road-masters work and get leave of absence and authority and aid to visit such a gathering look rather coldly upon the efforts of this class to learn their business better in this way. Those who were present showed much interest in the discussions, but the convention adjourned as soon as it got fairly into working order, and the topics taken up were both few in number and hastily and inadequately discussed. Very little can be done in a day in an organization of this kind; and though it may be desirable to get through its business as rapidly as possible, with discussion this is not so. Fifteen minutes or half an hour on one topic may hardly do more than serve to remind the members of the facts in their experience and set them to reflecting and finally to talking.

Of course in such a gathering there will be some who can see no reasonableness outside of their own pet theories and notions, and no sense in practices to which they are unaccustomed. A road-master usually works in a comparatively narrow field, under conditions, such as nature of earth, road-bed, ballast, drainage, rain-fall, etc., which are special and not general. He adjusts his practice, or tries to, to suit his circumstances, and when he finds that some one else somewhere else has a very different practice, he sometimes condemns it at once, not reflecting that perhaps the circumstances there are as different as the practice, and the latter perhaps well suited to the former. The policy which is successful and most advisable on the plains, where rains are rare, or on the Colorado Desert, where there are none and no soil

but sand, might not do at all in Mississippi bottom land, with occasional rain-falls of two inches in one hour, or in mountains where torrents come sweeping down the ravines after a shower, carrying mud and rocks with them. It would be well, when road-masters report to a committee or otherwise state their practice for them to specify the nature of the road-bed, ballast, climate, traffic, weight of rolling stock used, and the like. Very likely the practice of the Master Mechanics' Association, having committees prepare circulars containing questions to be answered, could be followed with good results, for certain topics, by the Road-Masters' Association.

One of the longest discussions in the convention was over the relative merits of split and stub switches, concerning which there was a great diversity of opinion, experiences having been radically different, it appeared. Also, in discussing the best time to cut tie timber, some differences of opinion were expressed; but the speakers failed to say what kind of timber they had in view. This makes a great difference. Resinous woods may prove durable whenever cut, while other woods, having no natural preservative fluid, will rot quickly if cut in the spring. The life of ties, even of the same kind of wood, is different in different parts of the country, and it is not to be expected that there should be unanimity of opinion when the facts are so different.

On the whole, the road-masters of the country have done themselves credit of late years. In the years of bad business and low rates managers have become convinced that for economical operation a good track and road-bed are indispensable. These have, therefore, made greater requirements of their road-masters, and they have answered them well, so that, without doubt, our railroads are in better condition than ever before, and very much better than a few years ago. Accidents from defective road are rarer, in spite of a greater mileage and a heavier traffic, and on some lines faster trains. A few of our roads have trains nearly as fast as the fastest in England, and many as fast as the fastest in Continental Europe, though the average cost of our roads is not one-third that of the English roads and but about half that of the Continental roads. But there is plenty of room left for improvement, or at least there is plenty of roads which still need a great deal of improving, and one of the best uses of the Road-Masters' Association should be to spread a knowledge of the means by which the best roads have reached their present degree of perfection, and of the practices by which they maintain it.

Foreign Railroad Notes.

Wehrmann, who was sent to England a few years ago by the Prussian Minister of Commerce to make a special study of the freight business of the railroads there (being himself a manager of a Prussian government railroad), in his report, makes the following statements:

"Differential tariffs occupy a large space in the English system of rates, and most commonly have for their object—as in Germany, for that matter—the favoring of the seaports. Thus, we were assured that the rates in force between London and Liverpool are for the most part lower than those existing between these two cities and the intermediate stations."

The German Railroad Union has found it necessary to revise its "free-pass" regulations again, for about the tenth time in thirty years. It has rules providing for the distribution of a certain number of free "Union tickets," good on all roads of the Union—that is, on nearly all German, Austrian and Roumanian and some Dutch and Belgian roads—among the different companies, in certain definite proportions. At first all officers above a certain grade got them; at other times they have been distributed according to the mileage of the roads; but, however regulated, there have always been complaints that the distribution was burdensome to certain roads. Recently the lines leading to the great cities have complained of the amount of traveling done over them on the Union tickets, while on out-of-the-way lines such tickets were rarely seen. The Imperial railroads in Alsace and Lorraine and the Prussian state railroads now take the lead in the complaints, and a committee has been appointed to revise the regulations. What seems a very sensible proposition has been made, which is that record should be kept of the traveling on these tickets, and that the companies whose officers ride on them on other roads should pay such roads regular fares amounting to about one-half of the ordinary fares.

The German Railroad Union, which is the most thoroughly organized of railroad associations, for some years has given prizes for improvements and inventions which seemed to it of especial merit, but has generally, it is reported, given its prizes for inventions which have never come into use to any extent. This year the first premium for an improvement in road construction was granted to A. W. de Serres, Director of Construction and of Road for the Austrian State Railroad Company, for an iron superstructure (substitute for ties) which, under the name of the Serres & Battig system, has found considerable favor in different countries of Europe of late years. The prize was about \$1,800. A prize of \$730 was given for a freight-door lock.

A recently-issued code of regulations for the transportation of live stock in the German Empire requires that stock trains shall run at an average speed of 15 miles an hour, that when the cattle are carried more than 24 hours they shall be watered on the way, for which a special charge may be made; that there shall be one man to tend the cattle for every three car-loads; and that certain precautions shall be taken in loading, switching, etc.

There is to be a grand national exhibition in Brussels next year, at which the management of the state railroads proposed that the manufacturers should exhibit every kind of

locomotive, tender, car or other vehicle used on these roads. The manufacturers not caring to construct material for which they might afterward find no sale, the state has agreed to order a sample of each, to be exhibited and not taken by the purchaser until the next time that it lets a contract for similar material, and probably the price will be fixed by those obtained at such letting. This rolling stock is to be exhibited in an annex by itself, and is expected to be one of the largest exhibitions of the kind ever made.

The extent to which the specialization of technical education may be carried is illustrated in the programme of a course of instruction to be given at the Vienna Industrial Museum the coming winter in the "Timber Industries Section." The subjects in which instruction is to be given are: The cultivation of the most important timber trees; the getting out of lumber and timber in Austria (what we would call the business of "lumbering"); the properties of woods in relation to their use in the arts; the chemical technology of wood; tools and machines for wood-working; arrangement and management of shops; timber joints, including one general course, by a master car-builder, and a second course for carpenters and cabinet-makers; the technology of materials used in connection with wood construction; and finishing work. There are twelve different instructors, but the course is not so formidable as it appears, being concluded within 2½ months if the student attends five week-day evenings and Sunday mornings, and being intended, apparently, for workmen, the fee for the course being but one dollar.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

New Jersey Southern.—Track laid on an extension of the *Tom's River Branch* from Barnegat Junction, N. J., southward to Barnegat, 2 miles.

Cheraw & Chester.—Extended from Fishing Creek Bridge, S. C., eastward 2 miles. Gauge, 3 ft.

St. Joseph & Des Moines.—Extended from King City, Mo., northeast 6 miles. Gauge, 3 ft.

Houston & Texas Central.—The *Waco Branch* is completed to a point fifteen miles northwest from Waco, an extension of 4 miles.

Cincinnati Southern.—On the northern end the track has been extended from the Tennessee line southward to Bear Creek 11 miles. On the southern end it has been extended from Wartburg, Tenn., north by east to Rock Creek, 8 miles.

Atchison, Topeka & Santa Fe.—The track of the *Kansas City, Emporia & Southern Branch* has been extended from Eureka, Kan., south 5 miles.

St. Paul & Sioux City.—The *Minnesota & Black Hills Branch* is completed to a point twenty-two miles west from Heron Lake, Minn., an extension of 12 miles. The *St. Dodge Branch* has been extended from Garden City, Minn., south to Shelbyville, 15 miles.

This is a total of 65 miles of new railroad, making 1,863 miles in all this year, against 1,273 miles reported for the same period in 1878, 1,223 in 1877, 1,556 in 1876, 746 in 1875, 1,025 in 1874, 2,507 in 1873 and 4,623 in 1872.

THE GENERAL PASSENGER AND TICKET AGENTS' ASSOCIATION held its special meeting, as announced, in New York, beginning Friday last. Thursday a large number of the members had a conference with Mr. Fink to consult as to measures to be taken to prevent some of the abuses now attending the competitive passenger business. The proceedings of this conference we publish elsewhere. It will be seen that the important resolutions passed received very little opposition, so that they may be assumed to represent the prevailing opinion of the passenger men, who are those most familiar with the facts, as to the evils and the remedies most likely to be effective. And it is not probable that those who voted against some of the resolutions, such as that against paying commissions, advocate commissions as a general policy. Commissions sometimes enable an indirect or otherwise unfavorable line to get a good share of the competitive trade, without directly reducing its rates below those of its rivals. When all pay commissions, it pays more than its rivals, and the tickets are generally sold for less than the regular rates. Now, unless you give such a line some substitute for this mode of getting business, it must go without, and that, of course, it will not do so long as there is a cent of profit in it. But the passenger men find it politic to treat the matter delicately. They do not like to gain the enmity of the whole race of brokers by openly declaring that they will destroy their occupation, and then find themselves compelled to beg (and pay) for their good services again because of "lack of harmony" or other cause of failure to carry out the reform.

The meeting of the Association began on Friday, and closed Tuesday afternoon. The rate-sheet occupied the time until Tuesday, when some resolutions were passed, which will be printed and distributed among the parties interested probably next week. There was a fair attendance, but a number of the Chicago and St. Louis members were called home almost as soon as they arrived, because of the sudden and unexpected restoration of rates to and from Missouri River points. The spring meeting of the Association is to be held in Cincinnati.

THE FRESH BEEF EXPORTS do not increase as fast as many anticipated two years ago. There are considerable exports, but not enough to make any appreciable effect on our cattle markets or to stimulate production. The total exports last August were 2,356 tons, which 10,000 not very heavy cattle would supply. Compared with August of last year the increase is large—205 per cent., but the summer

business was very light last year. This year 75 per cent. of the whole was shipped from New York, 15 from Boston, and the other 10 per cent. from Philadelphia. How small these exports were when compared with other meat exports will appear better from the fact that the exports of tallow were nearly twice as great in weight as the fresh beef exports, while the exports of hog products were 43,180 tons, or about nineteen times as great. Generally the hogs contribute much more to our export business than horned cattle. But fresh beef is not the largest item which the latter furnish: in August in addition to the 2,356 tons of fresh beef we exported 1,493 of butter, 8,089 of cheese and 4,439 of tallow, and 1,495 of salt beef—17,872 tons in all, against 43,180 of pork, bacon, hams and lard. It is noticeable that these articles are exported chiefly from New York, and that Baltimore especially has a very small share of them—in August only 875 tons out of a total of 61,051. On the other hand Boston, which does not make much of a figure as a grain exporter, has a very considerable export business in provisions—7,718 tons in August, and ranked above Philadelphia, which exported but 5,118 tons. The place fourth in rank would not be guessed by most readers: it is Huron—that is, the custom-house at the Grand Trunk crossing of the St. Clair opposite Sarnia, and two miles above Port Huron, Mich., the place being locally known as Port Gratiot. Its exports in August were 2,628 tons—three times as much as the Baltimore exports. Doubtless pretty much all went by the Grand Trunk for Canadian consumption or re-export. Nearly all the rest, and 70 per cent. of the whole, was exported from New York. The comparatively large business of Boston is doubtless due to the fact that it packs on a large scale (for an Eastern city) especially for export, and has long done so.

CANAL RATES have advanced within the past few days about one-fifth, and Wednesday were quoted at 9 cents a bushel for wheat, 8½ for corn and 5¼ for oats, from Buffalo to New York. These are the highest rates that have been reached for several years, and more than double the July rates. Lake rates have not varied more than ¼ cent for a week, standing nearly all the time at 4½ cents for corn and 5 for wheat from Chicago or Milwaukee to Buffalo. Ocean rates, which have been as low at 6¼d. recently, have recovered to 7¼d. There has been an advance in the elevator charge at Buffalo from ¾ to ¾ cent, and the total cost of getting a bushel of wheat from Chicago to New York by water last Wednesday was 14½ cents, against 18 cents by rail. With only this difference, the railroads are likely to get a large share of the grain. To Liverpool from Chicago the cost by water is now about 30 cents, which is just about twice as much as it was three months ago.

THE SOUTHWESTERN ASSOCIATION has been substantially renewed, and it has restored rates; but all the work of apportioning business among the eight companies concerned remains to be done. At the time it was decided to put an end to the war, when the representatives of the roads came together in New York last week, though they did not agree as to a division of the business, they agreed that they would agree, and that within a month. At a meeting in Chicago this week the action at New York was confirmed, and we may assume that the roads were not able to agree upon the proportions in which the business should be divided, for a telegram says that they agreed to leave this important matter to Mr. C. C. Wheeler, of the Chicago & Northwestern, and Mr. Albert Fink. Rates were restored Sept. 12.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Western Union Telegraph, annual meeting, at the office in New York, Oct. 8.
Northern Pacific, annual meeting, at the office, No. 23 Fifth avenue, New York, Sept. 24, at noon.

Railroad Conventions.

The *Southern Railway & Steamship Association* will hold its annual meeting at the Kimball House, Atlanta, Ga., Oct. 1, beginning at 10 a. m.

The *Order of Railroad Conductors* will hold its twelfth annual convention, in New York city, beginning Oct. 7. The meetings will be held in the building No. 300 Eighth avenue.

The *General Time Convention* will hold its regular fall meeting at the Windsor Hotel, New York, Oct. 9.

The *Southern Time Convention* will hold its fall meeting at Barnum's Hotel, Baltimore, Oct. 15.

Dividends.

Dividends have been declared as follows:
Western Union Telegraph, 1½ per cent., quarterly, payable Oct. 15.
Atlantic & Pacific Telegraph, 0½ per cent., quarterly, payable Sept. 30.
Union Pacific, 1½ per cent., quarterly, payable Oct. 1. The transfer-books close Sept. 19.

Foreclosure Sales.

The *Fl. Wayne, Jackson & Saginaw* road will be sold at Jackson, Mich., Dec. 3, under foreclosure of first mortgage. The road extends from Fort Wayne, Ind., to Jackson, Mich., and has a bonded debt of \$1,500,000 first and \$500,000 second mortgage bonds.

Southwestern Railway Association.

A meeting of representatives of the roads, which formerly composed this Association, was held in Chicago Sept. 11. The roads represented were the Chicago & Alton; Chicago, Burlington & Quincy; Chicago, Rock Island & Pacific; Hannibal & St. Joseph; Missouri Pacific, and the St. Louis, Kansas City & Northern. It was understood that the Kansas City, St. Joseph & Council Bluffs would acquiesce in the action to be taken by the meeting. The old association was not renewed, but resolutions were unanimously passed restoring the rates on freight from Missouri River points to those in force April 12, 1877, to take effect Sept. 12; also,

restoring passenger rates to the figures as published in the rate-sheets dated Sept. 1, and issued at Chicago, St. Louis and Kansas City.

Another meeting was held in Chicago, Sept. 18, at which the Missouri Pacific waived its claim for a share in the Chicago business, and it was decided that, if the roads interested could not agree upon a division of business, the matter should be submitted to a committee of three, and if this also should fail, that the track line arbitrators should be allowed to fix the percentages of division, their decision to be final. Territorial limits were fixed as to Chicago.

Brotherhood of Locomotive Firemen.

The opening of the annual convention in Chicago was noted last week. The Convention continued in session until Sept. 13, most of its work being done with closed doors, as is usual. The constitution of the order was slightly amended and rules adopted for the conduct of its business. Addresses were made to the Convention by Hon. O. M. Wilson, of Indianapolis, Counsel to the Brotherhood, and others, at different times in the course of the session.

The most important action taken was in the unanimous adoption of the following resolution:

Resolved, That this order, the Brotherhood of Locomotive Firemen, totally ignore strikes, and we hereafter settle our grievances with our employers by arbitration.

Under the operation of this resolution, all cases of differences as to wages between employers and employed will be referred to arbitrators under the direction of a committee of grievances chosen from all parts of the country. The committee is composed of M. Geffer, Ole Thompson, L. Archer, S. McGaffey, P. Sullivan, J. Clarke, C. T. Ritchey, C. J. Magee, A. Bassett, R. S. Keith, W. P. Lanforth and W. Maroney.

Railroad Traveling & Passenger Agents' Association.

The annual convention of this Association in Philadelphia last week closed on Sept. 11. On the second day a committee report recommending several amendments to the constitution and by-laws was adopted, and other routine business transacted. It was decided to hold the next meeting in Buffalo, N. Y., on the second Wednesday in August, 1880. At the close of the meeting the members started in a body on an excursion to Long Branch and New York, which was much enjoyed.

Southern Railway & Steamship Association.

The following circular is issued from the office of the President, under date of Sept. 12:

"Notice is hereby given that the annual convention of the Southern Railway & Steamship Association will meet at the Kimball House, Atlanta, Ga., at 10 o'clock a. m., on Wednesday, first day of October, 1879.

"The Convention held at the Greenbrier White Sulphur Springs, West Va., Aug. 13 and 14, 1879, directed that notice be given in this call that at the annual convention the proposed amendment to Article 22 of Agreement, and change of Rule XI, as unanimously recommended by a committee of seven at said convention, will be acted on.

"The proposed amendment and change of rule are as follows:

"Article 22 to be amended so as to read:

"If any member of the Association does not approve of the decision of the General Commissioner, made under authority of Articles 16 and 17, it may appeal from such decision and require an arbitration of the question by a disinterested party or parties, not to exceed three in number, two of whom are to be agreed upon between the several members interested in the question, and the third to be selected by these two in case they cannot agree, the decision of such arbitrators, or a majority thereof, to be final and conclusive.

"If the parties cannot agree upon the arbitrators, the General Commissioner shall have authority to appoint two of them, which two will appoint the third if they cannot agree."

"Rule 11, page 609, to be changed so as to read:

"In determining the divisions at any one point, allotments should be made to the several lines and not initial roads, so as to include the sub-divisions of business."

Railroad Claim Agents' Association.

The opening of the annual convention of this Association in Philadelphia was noted last week. At the second day's session, on Sept. 11, Messrs. Riggs, Rogers and O'Grady, the Committee appointed to consider the rule in relation to the using of all possible dispatch by railroad companies in the handling of claims, made a report containing recommendations to the railroad managers. The report was accepted, and it was decided, at the suggestion of the committee that the delegates to the next meeting be empowered to vote upon the propositions. Several other matters of interest were brought up and discussed. It was decided to hold the next convention, on the second Wednesday in September, 1880, at Cleveland, O., and not in Indianapolis, as reported by telegraph last week.

ELECTIONS AND APPOINTMENTS.

Boston & Lowell.—Mr. Arthur A. Hobart has been appointed Superintendent in place of Wm. M. Parker, resigned. He has been for a short time Superintendent of the Troy & Boston; he was previously Master of Transportation on the Chicago, Burlington & Quincy, and, before going to that road, he was Division Superintendent on the Chicago & Northwestern. Mr. Hobart is still comparatively a young man, but he has made himself a reputation as an active and capable officer; while on the Northwestern he was especially noted for his skillful management of the train service of his division.

Brotherhood of Locomotive Firemen.—At the annual convention in Chicago, last week, the following officers were chosen for the ensuing year: Grand Master, F. W. Arnold, Columbus, O.; Vice-Grand Master, J. E. Briggs, Waterloo, Ia.; Grand Secretary and Treasurer, William M. Sayre, Indianapolis; Grand Instructor, S. M. Stevens, Lowell, Mass.; Grand Warden, O. H. Crossman, Buffalo, N. Y.; Grand Conductor, Daniel Lazart, San Francisco; Grand Inner Guard, W. H. Whipple, Boston; Grand Outer Guard, D. H. Dill, Marshall, Tex.; Grand Chaplain, William Karaher, Philadelphia; Grand Marshal, William Killand, Chicago; Editor of the magazine, William M. Sayre, Indianapolis; Grand Trustees, W. T. Gunder, John Broderick and J. M. Dodge.

Chicago, Pekin & Southwestern.—Mr. Samuel B. Reed, of Joliet, Ill., has been appointed Receiver, in place of F. E. Hinkley, removed by the Court on application of a number of the creditors.

The Receiver has appointed Mr. Malcolm Smith General Superintendent, with office at Streator, Ill. Mr. Smith has been for many years on the Chicago & Alton.

Connecticut & Passumpsic Rivers.—At the annual meeting in Newport, Vt., Sept. 11, the following directors were chosen: Stephen Foster, Stanstead, P. Q.; Lucius Robinson, Newport, Vt.; S. S. Thompson, Lyndonville, Vt.; Alden Spence, Newton, Mass.; Emmons Raymond, Cambridge,

Mass.—Gardner C. Brown, Amos Barnes, Warren K. Blodgett, F. A. Peters, Boston. The new directors are Mr. Peters to fill vacancy, and Mr. Thompson, who succeeds Hon. T. F. Redfield, ineligible to reelection on account of his position as a judge. The board elected Emmons Raymond President; Warren K. Blodgett, Vice-President; N. P. Lovell, Treasurer; Elijah Cleveland, Secretary. Mr. Blodgett succeeds Judge Redfield; the others are re-elected.

Delaware River.—This company, successor to the Delaware Shore, has elected Thomas L. Ogden, President.

Evansville & Seymour.—The first board of directors of this new company is as follows: A. W. Carpenter, C. B. Cole, E. C. Devore, John Hume, J. N. McBeth, Robert Patterson, B. F. Price, S. F. Shields, A. Thompson. Office at Evansville, Indiana.

Gulf, Western Texas & Pacific.—At a special meeting of the board of directors in Cuero, Tex., Mr. M. D. Monsarrate was elected President and Superintendent, in place of Capt. Henry Sheppard, deceased; Mr. Alfred Da Costa was chosen Secretary, in place of Mr. Monsarrate.

Harrisburg, Portsmouth, Mt. Joy & Lancaster.—At the annual meeting in Philadelphia, Sept. 8, the following directors were chosen: Josiah Bacon, Lewis Elkin, John M. Kennedy, Wistar Morris, George B. Roberts, Thomas A. Scott, N. Parker Shortridge, Edmund Smith and James Young. The road is leased to the Pennsylvania Company, and used as part of its main line.

Master Car-Painters' Association.—At the annual convention in Detroit, last week, the old officers were re-elected, as follows: President, D. D. Robertson, Michigan Central, Detroit, Mich.; Vice-President, J. H. Will, New York & Harlem, Morrisania, N. Y.; Secretary, R. McKeon, Atlantic & Great Western, Kent, O.

Missouri Central.—The officers of this company are: President, Joseph M. Clark; Secretary, James E. Carter; Treasurer, P. E. Chappell. Office at Jefferson City, Mo.

St. Paul Eastern Grand Trunk.—This company was organized at a meeting held at Chippewa Falls, Wis., recently, by the election of the following directors: W. H. Young, Oconto, Wis.; Wm. Wilson, Menominee, Wis.; C. H. Upham, Shawano, Wis.; Dana C. Lamb, Fond du Lac, Wis.; Alexander Stewart, Wausau, Wis.; S. B. Hubbell, Medford, Wis.; Thaddeus C. Pound, L. C. Stanley, Chippewa Falls, Wis.; Wm. P. Bartlett, T. E. Randall, Eau Claire, Wis.; W. A. Ellis, Peshtigo, Wis.; A. B. Stickney, St. Paul, Minn.; Jesse Spaulding, Chicago.

Southern Central.—At the last annual meeting in Auburn, N. Y., the following directors were chosen: Thomas C. Platt, Wm. C. Barber, Chauncey L. Rich, Jeremiah W. Dwight, Charles Cady, Robert A. Packer, John N. Knapp, Royal W. Clinton, Charles N. Ross, Dexter H. Marsh, James G. Knapp, E. Delevan Woodruff, E. D. Clapp. Inspectors of Election, James E. Tyler, W. L. Hoskins, L. C. Mann. The board elected Thomas C. Platt, President; Charles N. Ross, Vice-President; John N. Knapp, Secretary; Chauncey L. Rich, Treasurer.

Troy & Boston.—Mr. E. E. Aldrich has been appointed Superintendent, in place of Mr. A. A. Hobart, who has gone to the Boston & Lowell road. Mr. Aldrich has been hitherto General Ticket Agent.

Windsor & Essex Centre.—The permanent organization of this company was completed Sept. 11, by the election of the following directors: Alexander Cameron, Wm. McGregor, D. E. Odette, Windsor, Ont.; John J. Bagley, H. P. Baldwin, C. H. Buhl, James McMillan, Detroit, Mich. The board elected John J. Bagley, President; Alexander Cameron, Vice-President; Wm. B. Moran, Secretary and Treasurer.

PERSONAL.

—The Democratic State Convention of New York last week nominated Horatio Seymour, Jr., of Utica, for reelection as State Engineer and Surveyor. The Republican candidate for the same office is Howard Soule, of Syracuse.

—Hon. Alexander Mitchell, President of the Chicago, Milwaukee & St. Paul Company refuses positively to run for Governor of Wisconsin, for which office he was nominated by the Democratic State Convention.

—Mr. Wm. Parker has resigned his position as Superintendent of the Boston & Lowell Railroad, which he has held for several years past.

—Mr. Charles Fox, one of the chief promoters and builders of the South Side (now the Southern) Railroad of Long Island, and long President of the Company, died Sept. 15 at his residence in Merrick, N. Y., after a lingering illness, the indirect result of injuries received in an accident at Mineola, on the Long Island road, in 1869.

—Mr. Charles L. Heywood, formerly Superintendent of the Fitchburg Railroad, is now engaged in a project for the establishment of large slaughter-houses at Belmont near Boston, intended chiefly for the killing and preparing of meat for export to England.

—It is reported from Louisville that Gen. Adna Anderson has resigned his position as General Manager of the Paducah & Elizabethtown road. The report lacks confirmation as yet.

—Chicago gossip has it that the position of Assistant General Manager of the Chicago, Milwaukee & St. Paul (which Mr. John C. Gault will leave to become General Manager of the consolidated Wabash, Kansas City & Pacific) has been offered to Mr. J. W. Hobart, long General Superintendent of the Central Vermont.

—Mr. Charles Francis Osborne, formerly well known as a merchant in Petersburg and Richmond, and for several years President of the Petersburg Railroad Company, died recently at his residence in Orange County, N. Y., aged 80 years.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending Sept. 6 receipts and shipments at the eight reporting Northwestern markets and receipts of grain of all kinds at the seven Atlantic ports have been, in bushels, as follows for seven years:

Year.	Northwestern shipments.			Atlantic receipts.
	Total.	By rail.	P. O. by rail.	
1873..	6,810,373	3,300,843	881,902	4,363,702
1874..	3,105,478	3,441,377	323,019	2,320,692
1875..	3,747,319	3,829,607	1,498,520	3,313,601
1876..	4,240,764	4,192,884	1,808,411	3,012,296
1877..	5,015,253	4,398,804	963,998	4,745,661
1878..	8,462,587	6,605,490	1,310,410	6,846,930
1879..	7,750,569	5,137,970	1,443,917	7,521,212

The receipts at the Northwestern markets for the week are larger than in any previous week this year, though much smaller than in the corresponding week of last year. The shipments from these markets, on the other hand, are the

smallest since July. The rail shipments from these markets are nearly a fourth smaller than in the preceding week, and have not been so small since the first half of July, probably affected by the advance in rates made a week earlier. The receipts at Atlantic ports are nearly the same as in the week preceding. They have been now for seven weeks unusually regular and unusually large, averaging 7,523,000 bushels per week. Last year, when these receipts were very much larger than they had ever been before, they amounted to 44,885,000 bushels in these seven weeks; this year they have been 53,894,000 bushels, or 21 1/4 per cent. more.

Of the receipts at Northwestern markets for the week this year, 47.5 per cent. was at Chicago, 17 at Toledo, 13 at St. Louis, 7.4 at Milwaukee, 5.8 at Detroit, 4.9 at Peoria, 2.3 at Duluth, and 2.1 at Cleveland. Wheat receipts at Chicago and Milwaukee are just beginning to be considerable, as the new spring wheat begins to be marketed. A little more than half of the receipts are wheat, of which 27 1/2 per cent. went to Chicago, 25 1/4 to Toledo; 19 1/2 per cent. to St. Louis, 11 to Detroit and 9 1/2 per cent. to Milwaukee. Chicago received 79 1/2 per cent. of the corn.

Of the receipts at the Atlantic ports, 53.5 per cent. arrived at New York, 18 at Baltimore, 13 at Montreal, 9.5 at Philadelphia, 4.9 at Boston, 2.1 at New Orleans, and 0.1 per cent. at Portland. The New York receipts have been exceeded but twice this year; the Montreal receipts are much the largest of the year, and more than double its average receipts since navigation opened; Philadelphia receipts are 37 per cent. smaller than in the previous week and the smallest for seven weeks.

For the week ending Sept. 16 (Tuesday) receipts and shipments at Chicago and Milwaukee were, in bushels:

	Receipts.	Shipments.
Chicago.....	3,394,276	3,430,614
Milwaukee.....	614,300	553,000
Total.....	4,008,576	3,984,214

For the same week, ending Sept. 16, the preceding week and the corresponding week last year the receipts at the four leading Atlantic ports were:

	Week ending—		
	Sept. 16, '79.	Sept. 9, '79.	Sept. 17, '78.
New York.....	3,160,385	3,072,956	4,458,079
Baltimore.....	1,408,790	1,428,914	916,159
Philadelphia.....	904,550	836,375	965,200
Boston.....	400,194	444,943	440,110
The four cities.....	6,011,895	6,383,188	6,779,547

The week showed a decrease both from the previous week and from last year. Compared with the corresponding week in 1878, Boston shows a small gain, Philadelphia just about holds its own, New York fell off largely, while Baltimore shows a great increase, which was chiefly in wheat. New York receipts were 52.7 per cent. of the total, against 57.5 per cent. last week, and 65.8 per cent. in the corresponding week last year. Of the total New York receipts only 916,265 bushels—28.9 per cent.—were by rail.

Railroad Earnings.

Earnings for various periods have been reported as follows:

Eight months ending Aug. 31:				
	1879.	1878.	Inc. or Dec.	P. c.
Chesapeake & Ohio.....	\$1,202,136	\$1,234,015	D. \$31,879	2.6
Chl., St. Paul & Minn.....	650,200	564,907	I. 85,293	16.7
Hannibal & St. Joseph.....	1,122,530	1,195,076	D. 72,546	6.1
Int. & Gt. Northern.....	604,364	793,193	I. 111,171	14.0
Mobile & Ohio.....	1,001,673	1,140,589	D. 85,916	7.5
Seven months ending July 31:				
Scioto Valley.....	202,816	174,573	I. 28,241	4.7
Atlantic, Miss. & Ohio.....	853,710	869,251	D. 15,541	4.0
Net earnings.....	324,787	224,315	I. 100,472	44.8
Bur., Cedar Rap. & No.....	701,814	888,538	D. 129,724	14.3
Net earnings.....	246,725	248,023	D. 1,298	0.5
Burlington & Mo. River				
In Nebraska.....	960,756	814,769	I. 151,989	18.7
Net earnings.....	386,145	346,207	I. 39,938	11.5
Chicago & Alton.....	2,720,755	2,437,368	I. 283,387	11.6
Net earnings.....	1,132,378	974,937	I. 157,441	12.2
Dakota Southern.....	118,328	124,301	D. 5,973	4.8
Net earnings.....	46,381	57,573	D. 11,192	19.4
Int. & Great Northern.....	782,598	677,506	I. 105,092	15.5
Net earnings.....	156,388	157,990	D. 1,611	1.0
Mem., Paducah & No.....	88,901	115,527	D. 26,626	23.1
Net earnings.....	182	23,393	D. 23,216	99.2
Nashville, Chattanooga &				
St. L.....	971,476	834,076	I. 137,400	16.3
Net earnings.....	393,098	302,815	I. 90,283	29.8
St. Louis, Iron Mt. & So.....	2,261,262	2,168,379	I. 92,883	4.3
Net earnings.....	500,551	780,788	D. 187,237	23.8
St. Paul & Sioux City.....	340,775	332,833	I. 7,942	2.4
Net earnings.....	124,500	124,409	I. 100	0.1
Sioux City & St. Paul.....	188,063	207,232	D. 19,169	9.3
Net earnings.....	16,984	54,819	D. 38,735	70.7
Southern Minnesota.....	315,720	427,184	D. 111,464	35.1
Net earnings.....	170,139	237,009	D. 66,870	25.7
Month of July:				
Burlington & Mo. River				
In Nebraska.....	\$104,069	\$70,638	I. \$33,431	30.6
Month of August:				
Chesapeake & Ohio.....	\$215,945	\$169,337	I. \$46,608	14.1
Chl., St. Paul & Minn.....	77,902	70,088	I. 7,814	10.2
Ind., Decatur & Spring-				
field.....	17,006	.....	.....	.....
Net earnings.....	10,680	.....	.....	.....
Int. & Gt. Northern.....	121,776	115,887	I. 5,889	5.3
Mobile & Ohio.....	104,600	114,979	D. 10,379	9.9
Scioto Valley.....	20,005	20,082	D. 77	0.3
First week in September:				
Chl. & Eastern Illinois.....	\$21,235	\$17,312	I. \$3,923	23.0
Chl., Mil. & St. Paul.....	257,000	177,796	I. 79,204	27.7
Mo., Kansas & Texas.....	78,774	76,349	I. 2,425	3.2
St. Louis, Iron Mt. & So.....	142,000	88,398	I. 53,602	61.3
Week ending Sept. 5:				
Great Western.....	82,465	\$91,569	D. \$9,104	9.9
Week ending Sept. 6:				
Grand Trunk.....	\$172,290	\$185,039	D. \$12,749	6.9

Canada Crops.

A telegram from Toronto says that the Grand Trunk Railway has collected statistics of this season's crop all along the line throughout the Dominion. Generally, the crop is reported as the largest ever harvested in Canada. The only exception in it is the spring wheat in Ontario, which has been a signal failure, having been injured by the mildew and weevil and the rust.

Petroleum.

Stowell's Petroleum Reporter gives the production of the Pennsylvania oil wells for August as follows, in barrels of 42 gallons:

	1879.	1878.	Increase.	P. c.
Production.....	1,869,052	1,341,928	527,124	39.2
Shipments.....	1,808,239	1,655,651	152,588	9.2
Stock on hand, Aug. 31.....	7,390,945	4,717,877	2,673,068	56.7
Number of producing wells.....	11,565	9,884	1,701	17.2

On Aug. 31 there were 258 new wells being drilled. August production showed an increase of 154,595 barrels over July. Production showed a much larger increase than shipments.

Rates to Missouri River Points.

Mr. J. W. Midgley, as Commissioner for the roads formerly composing the Southwestern Railway Association, that is, the Chicago & Alton; Chicago, Burlington & Quincy;

Chicago, Rock Island & Pacific; Kansas City, St. Joseph & Council Bluffs; Hannibal & St. Joseph; Wabash; Missouri Pacific and the St. Louis, Kansas City & Northern, gives notice that from Sept. 18 and until further notice the roads above named will charge the following rates solely on business brought from the points named and destined to Kansas City, Leavenworth, Atchison or St. Joseph, the rates given being in cents per 100 lbs.:

	1st class.	2d class.	3d class.	4th class.	Special.
On freight from Cleveland:					
From Chicago.....	85	70	45	30	25
From St. Louis, Louisiana, Hannibal, West Quincy or Burlington.....	65	50	30	20	15
On freight from Buffalo:					
From Chicago.....	85	65	45	30	25
From St. Louis, Hannibal, West Quincy or Burlington.....	65	50	35	20	15
On freight from Cincinnati:					
From St. Louis.....	65	50	35	25	20
From Louisiana or Hannibal.....	60	45	30	20	15
From Quincy, Burlington or Davenport.....	65	50	35	20	15
On freight from Pittsburgh or Wheeling:					
From Chicago.....	85	70	45	30	25
From St. Louis, Louisiana, Hannibal, W. Quincy or Burlington.....	65	50	35	20	15
From Davenport.....	63	52	35	22 1/2	15

It must be distinctly understood that, in case the above rates are less than the local rates of the associated roads to Missouri River points, they shall apply only on business as above specified, and carried by all-rail routes to destination. The associated roads will also charge, from Sept. 12, the following arbitraries upon business from Boston, New York, Philadelphia and Baltimore to the Missouri River points (Kansas City, Leavenworth, Atchison and St. Joseph) in cents per 100 lbs.:

	1st class.	2d class.	3d class.	4th class.	Special.
From Toledo.....	101	80	56	39	34
" Chicago.....	84	66	45	30	25
" St. Louis.....	65	50	30	17	12
" Hannibal, etc.....	63	48	29	16	11

Governed by the revised Western classification.

The following arbitraries will apply on business to Baltimore, Philadelphia, New York or Boston from the Missouri River points.

	1st class.	2d class.	3d class.	4th class.
From Missouri River points:				
To East St. Louis, East Hannibal, etc.....	55	45	35	20
" Chicago.....	75	60	45	25
" Toledo.....	97	79 1/2	58	31 1/2

On business to Boston the second-class rate should be 55 cents to Chicago.

Circular 1, from Commissioner J. W. Midgley, of the newly-organized association of roads formerly making the Southwestern Association gives rates as follows:

To Missouri River Points from—			
Per 100 lbs.:	St. Louis.	Chicago.	Toledo.
Class 1.....	\$0.85	\$0.85	\$1.02
" 2.....	0.50	0.70	0.84
" 3.....	0.35	0.45	0.56
" 4.....	0.25	0.30	0.39
Special class.....	0.20	0.25	0.34
Lumber.....	0.15	0.25	0.30

Per barrel:

	St. Louis.	Chicago.	Toledo.
Salt, cement and plaster.....	0.35	0.60	0.65
Coal oil.....	0.55	1.05	1.45
Coke, per ton.....	3.00	5.00	7.00

Car loads of 10 tons:

	St. Louis.	Chicago.	Toledo.
Class A.....	50.00	75.00	100.00
" B.....	40.00	60.00	80.00
" C.....	30.00	40.00	60.00

The associated roads are the Chicago & Alton, the Chicago Burlington & Quincy, the Chicago, Rock Island & Pacific, the Kansas City, St. Joseph & Council Bluffs, the Hannibal & St. Joseph, the Wabash, the Missouri Pacific and the St. Louis, Kansas City & Northern.

Coal Movement.

Anthracite tonnage for the week ending Sept. 6 was: 1879, 493,969; 1878, 163,444; increase, 330,525 tons, or 202.2 per cent.

Continued negotiations for a combination of the anthracite companies are reported. It is said that one can be made, if the Lehigh operators, who are to meet this week, will agree.

The coal tonnage of the Pennsylvania Railroad for the eight months ending Aug. 31 was as follows:

	1879.	1878.	Increase.	P. c.
Anthracite.....	642,544	423,030	219,514	51.7
Semi-bituminous.....	1,177,131	1,027,044	150,087	14.6
Bituminous.....	1,106,105	993,319	112,786	11.6
Coke.....	899,174	687,962	211,212	30.7

Total..... 3,897,014 3,131,955 765,059 24.4

THE SCRAP HEAP.

Railroad Equipment Notes.

Work at the shops of the Ohio Falls Car Co., in Jeffersonville, Ind., has been interrupted by a strike of the moulders, who demanded an advance of 25 cents a day. The company was willing to compromise and to agree to pay the rate of wages usual in other shops, but the strikers held out. At latest advices most of the strikers were still holding out, and the company had hired some new men.

The Baldwin Locomotive Works in Philadelphia have an order for eight heavy freight engines for the St. Louis & San Francisco road.

The Heimbacher Forge & Rolling Mill Co., in St. Louis, have some large orders for car axles.

The St. Charles (Mo.) Car Works have orders for 100 box cars for the Kansas City, Lawrence & Southern; 200 flat cars for the Atchison, Topeka & Santa Fe; 50 coal cars for the Atchison & Nebraska; 90 stock cars for the Des Moines & Fort Dodge, and 24 narrow-gauge freight cars for the Kansas City & Eastern.

The Missouri Car & Foundry Co. is building a large number of cars at its leased shops in Cambridge City, Ind.

The Erie Car Co., at Erie, Pa., is building 200 box cars for the Indianapolis & St. Louis road.

Iron and Manufacturing Notes.

The Abbott Iron Co. at its annual meeting in Baltimore last week, elected C. H. Ashburner President; John S. Gilman, Vice-President and Treasurer; S. F. Eagle, Secretary. The plate mill is now running full time and employing about 300 men, and the rail mill will start up Oct. 1, employing about 300 more.

The Canadian Department of Railways and Canals has awarded the contract for 35 tons of bolts, for the Canadian Pacific road, to the Dominion Bolt Co., of Montreal, at \$75 per ton, and for 700 tons of spikes to Miller Bros. & Mitchell, of Montreal, for \$47.75 per ton.

The Spring Lake Iron Co. has begun to build a charcoal blast furnace at Spring Lake, near Grand Haven, Michigan.

Franklin Furnace, in Sussex County, N. J., is now running steadily on Bessemer pig. Anthracite coal is used for fuel, with a mixture of local and African ores.

Onondaga Furnace, at Geddes, N. Y., has both stacks now in blast.

Columbia Furnace, at Hudson, N. Y., has been repaired and will soon be put into blast.

The rolling mill at Hamburg, Berks County, Pa., has been leased to Messrs. Wister & Fisher, who are preparing to start it up at once.

The Etna Iron Works, at Rome, Ga., have sold all the pig iron they had in stock—over 1,600 tons—to a Cincinnati buyer for \$30 per ton, cash.

The Carr River Iron Co. has leased the furnace at Ishpeming, Mich., and will start it up soon. The company's own furnace has gone out of blast for repairs, but will soon blow in again.

The Coöperative Iron & Steel Works, at Danville, Pa., are running full time on orders.

Riehle Brothers, of Philadelphia, are making two heavy crane-beam scales and a testing machine, to go to Russia. They are making a number of hopper-scales for grain elevators.

The old locomotive works at Lancaster, Pa., have been bought by Philadelphia parties, and will, it is said, be changed to a rolling mill.

The Beaver Falls Iron Works Co. has begun to build a new rolling mill at Beaver Falls, Pa. The machinery has been ordered.

Eight furnaces are now running in the Salisbury iron region in Western Connecticut—three at Canaan, one at Lime Rock, one at Huntville, one at Sharon Valley, one at Cornwall Bridge and one at Millerton, just over the line in New York.

The Howe Scale Co., at Rutland, Vt., now employs 400 men and has many orders ahead both for domestic and export trade. Through its Western agents, Borden, Selleck & Co., of Chicago, Cleveland and St. Louis, the company has recently taken a number of large orders including track-scales of 30 and 40 tons capacity for the Chicago & Northwestern, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy, the Painesville & Youngstown and the Port Huron & Northwestern, and a 30-ton stock scale for the Cleveland (O.) stock-yards.

Bridge Notes.

Wilkins, Post & Co., of Atlanta, Ga., have just completed a Post-truss combination bridge, two spans of 130 ft. each, over Fishing Creek, on the Cheraw & Chester road in South Carolina. The masonry was built by George A. Deming & Co., of Augusta, Ga., the bridge at the centre pier being 55 ft. above the water.

Clarke, Reeves & Co., at Phoenixville, Pa., have a large contract for bridge work to go to Chili.

Packing.

It is a wise railroad stock that knows its own par, nowadays.—*Boston Commercial Bulletin*.

Every little while we come across the ancient fossil, whose sole claim to distinction is that he has never done anything or known anything, and is consequently a sort of relic of past ages. Here is one, from the Reading (Pa.) Journal:

"Archibald Lewis, of Gibraltar station, aged 57 years, purchased his first railroad ticket last Tuesday evening, of L. P. Ash, Wilmington & Northern agent at Birdsboro. Mr. Lewis had only traveled in a railway train once before in his life, and that time paid his fare upon the cars. Tuesday evening was also the first time he had ever seen a telegraphic instrument."

A whole gang of section men on a railroad were taken sick the other day. At least, we suppose so, as they are reported to have thrown up an embankment.—*Plainfield (N. J.) Bulletin*.

"Why," asked the Solemn Man from Hohokus, as he toiled over the quarter of a mile or so of very rough board walk which separates the Erie depot in Jersey City from the ferry: "Why should the company be stopped from building this new depot they talk about here?"

"Shouldn't," said the commuter from Sufferns, who was sweating under the load of a basket of peaches; "Blast 'em! the cars ought to run right onto the ferry-boat."

"Well," said the politician from Paterson, "this here old depot is handy enough; gives a feller time to get a drink between the boat and the cars, you know."

"Give it up," said the flippant young man from Mahwah, "tell us the answer yourself this time, old man."

"Well," said the Solemn Man from Hohokus, with due deliberation, "this new depot ought to be stopped because it is a near-ferry-ous transaction."

It took the convention about three minutes to get the proper bearings of the conundrum; then there was a howl of execration, and the Solemn Man had to set 'em up for the crowd before he was allowed to join the euchre party in the smoking car.

California Tricks and Manners.

There are some things almost too sacred to be given to the public for five cents, but the following incident has got to be

put on record if our deadhead pass to Menlo Park is canceled in consequence before night. It appears that a high official of the C. P. R. R.—whose name is not Barker—was sitting at his desk the other morning, when his venerated aunt returning from San Mateo, drove by the company's building, and sent up for him by the driver. After waiting half an hour, which is understood to be a preliminary requisite in obtaining an interview with a C. P. potentate, she became impatient, and dispatched the man with a message of well-advised asperity. The tariff-regulating magnate could not be found by the messenger, much to the surprise of the ante-room clerk, and as it was equally certain he had not passed out, a search was at once instituted. It pains us to give the cold facts, but, after a careful inspection of the inner rooms, Mr. Barker was discovered wedged under the sofa, the same being lifted about two inches off its legs by the operation. He frantically resisted the efforts made to bring him to the surface, and gasped:

"Is it gone? Tell him 'twarn't me! Hold him! Call the police!"

"Why, Mr. Barker," said his astonished assistants, "what do you mean?"

"The fellow in the coupé. Sent word a lady wanted to see me. I know who it is. It's that bloodthirsty Bill Jimson. Tell him it's all a mistake. Some other man. I never even knew his—"

But just then the aunt aforesaid walked in, and the matter was explained.

All the same, however, the C. P. office has telegraphed for a Gatling gun, and all coupés stopping in front of its door hereafter had better be plated with boiler iron, or something, mark our words.—*San Francisco Evening Post*.

A New Track Inspection Car.

It will be remembered that about a year ago in the collision by which Engineer Johnson was killed and Supervisor Chas. McCulley had his feet cut off, the Street track tester was demolished. There has been just built in the shops of the company a new track indicator on another principle, the general idea of which was obtained from a German car for the same purpose, but in adaptation and detail materially different. The drawings were commenced in February last, and under the supervision of Mechanical Engineer J. B. Collin.

There was about three months' work under the supervision of Foreman Ludwig Keiffer, of the vice shop, in preparing the machinery from the drawings. The car is now standing on the track below the Twelfth street bridge. It is thirty-two feet long and is finished inside with hard wood. In the front left corner is a wash-room and water-closet. In the centre of the car stands a stationary walnut table on which are fixed three machines through which pass strips of paper like the similar arrangement in the old telegraphing machines. Over each of these machines are suspended three pencils in such a way that any deflection will cause the pencil to drop on the moving paper and make a mark.

In the centre of each machine are two magnets, one of which is connected with a clock and the other with buttons on each side of the car. Every five seconds, measured by means of the clock, electricity is sent into the magnet and an armature attracted which causes a pencil to drop on the paper, thus giving a record of seconds. At the passage of each mile post a button is touched by the person in charge of the car when a similar process is gone through with and thus a record of the miles is kept.

The machine of the left side of the table is a register of the gauge. It is connected with an axle between two small wheels which rest on the track. In the axle is a spring which keeps the wheels on each side pushed tight against the track. In this way any variation from the standard gauge is noted. The machine on the right shows the condition of the track surface. The pencil is connected, by means of a rod and bell-crank, with the spring of the car and any inequality in the surface is immediately registered by the jar given the spring. The third machine registers any difference in the elevation of the two rails of the track. This is done by means of a heavy pendulum swung precisely in the center of the car which under any swaying of the car maintains the perpendicular, and the car's variation is immediately registered. The car is almost ready for its first trial which will shortly be made.—*Altoona (Pa.) Call*.

Tramps.

Detective Wheeler, Depot Officer Bender, Conductor Snyder and Officers Carver and Buckley, had a lively time with four tramps in the Central Depot yard late Monday night. The roughs attempted to board a freight train, and were put off. They made an attempt on another train, and allowed that they would ride if they had to kill the crew. The conductor displayed a revolver, and they wilted. Then they stoned the Atlantic express East, and the yard watchmen and crews secured some of them in a freight car. The officers and railroad men named responded to a call by telegraph from Dispatcher Lynch at the roundhouse, and captured Tim Sullivan, Frank Curran, alias Spendan, Michael Butler and John Manning. The tramps showed fight, but soon found that they had awakened the wrong passengers. They were committed yesterday for further examination. Railroad men have many desperate cases of this kind to deal with.—*Utica (N. Y.) Herald, Sept. 17*.

Freight Conductor Pratt, of the Troy & Boston road, gave a tramp some supper the other night and allowed him to sleep in the caboose. In the morning the tramp was gone and with him his benefactor's valise full of clothing, and now Mr. Pratt advocates a stringent tramp law.

Old Rails from Belgium.

The Belgium *Moniteur des Interêts Matériels* of Aug. 31 says: "The 10,000 tons of old iron Vignolles rails which the government has just sold this week have been the subject of many comments. The price of \$14.85 offered for 5,000 tons, that of \$14.62 offered for 2,000 tons, of \$14.60 offered for 2,000 tons more, etc., may cause those who do not understand the facts of the case to suppose that there is a recovery in business. Let them undeceive themselves; speculation alone is at the bottom of it. These rails are bought for exportation, destined for America, to form ballast for vessels carrying empty petroleum barrels. Formerly empty petroleum barrels found purchasers in Belgium, but so many have been brought that the market has become glutted with them and their value here is greatly depreciated. It is therefore profitable to re-export them and to profit by a ballast like the old rails of which we have been speaking. There had already been two lettings of these same rails advertised. The prices offered, \$13.20 and \$13.79 per ton, were not approved, because the management of the state railroads had assigned a minimum value of \$14.55 to these rails and would not let them go below this rate."

OLD AND NEW ROADS.

American Union Telegraph.—A sharp controversy in Buffalo between this company and the Western Union, involving the cutting of wires, cutting down of poles and other riotous proceedings, has ended in a compromise, both companies awaiting the action of the courts.

The new company's lines have reached Philadelphia, but permission from the City Council to put up lines through the streets has yet to be obtained.

Atchison, Topeka & Santa Fe.—On the Kansas City, Emporia & Southern Branch the grading has been completed from Eureka, Kan., south 15 miles to the south line of Greenwood County. The track has been laid to a point 5 miles south of Eureka and 53 miles from the junction with the main line at Emporia.

Bell's Gap.—Arrangements are being made for the extension of this road from its present terminus at Lloyd, Pa. to Coalport on Clearfield Creek, a distance of 10 miles. The company offers to build if the people on the line will subscribe enough to grade the road and furnish ties.

The road, now only eight miles long, from Bell's Mills on the Pennsylvania Railroad to Lloyd, was built chiefly to carry coal and lumber. This year, however, it has developed quite a passenger business, its high grades and sharp curves and the wild mountain scenery on the line making it attractive to tourists; it has also carried many excursion parties who find pleasant resting places in the woods adjacent to the road.

Boston, Hoosac Tunnel & Western.—At Saratoga, N. Y., Sept. 12, the stay of proceedings granted in the matter of the crossings of this road over the Troy & Poston track was vacated. The Court confirmed the appointment of commissioners to lay out the necessary crossings and assess damages.

Burlington & Southwestern.—It is reported that this road will be leased to the Chicago, Burlington & Quincy Company, and that the lessee purposes extending it from the present terminus at Laclede, Mo., southwest to Kansas City, about 90 miles. A surveying party is already at work locating the extension.

The road owned by the company is in two sections, extending from Vile, Ia., west to Bloomfield, 60 miles, and from Moulton, Ia., southwest to Laclede, Mo., 82 miles, the company hiring the use of the St. Louis, Kansas City & Northern track from Bloomfield to Moulton, 14 miles, and of the Chicago, Burlington & Quincy from Vile to Burlington, 35 miles. It has not been a prosperous line, usually earning its bare running expenses or a little less, and it has been managed by a receiver for five years past. By the last report there were \$3,488,000 bonds outstanding, on which no interest is paid, and \$200,000 receiver's certificates.

With the proposed extension it would make a line from Burlington to Kansas City 371 miles long, or from Chicago to Kansas City 478 miles long, being 11 miles shorter than the Chicago & Alton's new line, or the line by the Chicago, Burlington & Quincy and the Hannibal & St. Joseph.

The reported lease is contradicted, apparently on authority, but the bondholders are said to be trying to raise money to build the extension from Laclede to Kansas City, and are negotiating for aid from the Chicago, Burlington & Quincy.

Canadian Pacific.—The Chief Engineer and contractors have completed an examination of the located line of this road from Winnipeg, Manitoba, as far as Portage La Prairie. Orders have been received from Ottawa for the contractors to begin work at once.

Central Branch, Union Pacific.—A circular from this company announces the opening of its South Solomon Division to Osborne, Kan., 10 miles from the junction with the North Solomon Division at Downs. The completion of the road was noted last week. Osborne is 218 miles from Atchison and the fares between the two points are \$8.75 first-class, and \$6.55 emigrant.

Cheraw & Chester.—The high bridge over Fishing Creek is completed, and track has been laid to a point two miles beyond the bridge and 19½ miles eastward from Chester, S. C. The track, it is expected, will be laid to the Catawba River, 24 miles from Chester, by the end of this month.

Chicago & Eastern Illinois.—During the present season extensive improvements have been made on this road. About 30 miles, between Watseka, Ill., and St. Anne, have been laid with steel rails, making 75 miles of the main track now of steel. About 100,000 new ties have been laid down and the work of ballasting the track has made much progress. Three wooden bridges have been replaced by iron. To accommodate increasing traffic 350 freight cars have been added to the equipment, and some new passenger cars and several heavy freight engines are now under contract.

Chicago & Pacific.—A bill in chancery has been filed in the United States Circuit Court in Chicago by John I. Blair to set aside the action by which a certain claim of T. S. Dobbins & Co., contractors, for \$500,000, was audited and allowed by the directors of this company, and to enjoin the entry of any judgment under that claim. The bill charges that the claim was fraudulent in its nature.

Chicago & Western Indiana.—The Mayor of Chicago last week vetoed the ordinance giving this company the right to build its road into the city, but the City Council on Sept. 15 passed the ordinance over the veto. The company is building a line from Dolton, Ill., into Chicago for the Chicago & Eastern Illinois road, but it is understood that it may also be used by the Grand Trunk as an entrance into the city. It bought outright the land for its tracks from the city limits to Fourteenth street, with the exception of a very few pieces which will be condemned, before it was known that any one intended to build a road there. The cost of the land bought is said to have been about a million of dollars.

Cincinnati Southern.—The contractors now have track laid to Rock Creek, Tenn., 98 miles from Chattanooga, and 93 miles north by east from the junction with the Western & Atlantic at Boyce's, where tracklaying began. Further progress is at present delayed by the Rock Creek bridge, which will probably be finished next week.

On the northern end the track has reached Bear Creek, 204 miles southward from Cincinnati. Here also the track-layers are waiting for the erection of a bridge, which will take a week or two to complete. There remain but 34 miles of track to be laid, and there is little doubt that the road will be completed by the middle of November, provided there is no delay with the bridges. A large one is to be put up at New River, where the two ends of the road are expected to meet.

Connecticut & Passumpsic Rivers.—At the annual meeting in Newport, Vt., Sept. 11, the stockholders voted to approve a recommendation of the board of directors, and authorized them to borrow \$100,000 to be repaid at the rate of \$10,000 a year, the money to be used in buying steel rails for the road.

Covington, Columbus & Black Hills.—It is reported that negotiations are in progress for a sale of this road, work on which was stopped some time ago by financial difficulties, to the St. Paul & Sioux City Company. It has completed 26 miles of track, of 3 ft. 6 in. gauge, extending from Covington, Neb., opposite Sioux City, Ia., on the Missouri, to Ponca.

Dakota Southern.—The bridge at Beloit, on the Sioux

City & Pembina Branch has been finished, and tracklaying will soon be begun on the extension northward to Sioux Falls, Dak., with the intention of completing it before Winter sets in.

Delaware Shore.—The bondholders who bought this road at the recent foreclosure sale, met last week and organized a new company, to be known as the Delaware River Railroad Company. The road extends from Woodbury, N. J., to Pennsgrove, 20 miles.

Denver, South Park & Pacific.—The Denver (Col.) Tribune says: It was rumored on the street that the Denver & Rio Grande managers intended to sue out a writ of injunction to prevent the Denver & South Park from going into the Arkansas Valley. The rumor was at once investigated, and there is little doubt of its truth. That such a proposition has been broached by the Denver & Rio Grande managers is positive. Whether they will dare to carry it into effect is a question which a very few days will decide. The aim of the plan is clear. The Denver & Rio Grande claims the right of way along the Arkansas River, and they desire to prevent the South Park from continuing its construction just as they stopped the Santa Fe. The completion of the line is of such great importance, both to the South Park and the people of Leadville, that any sum these people will claim may be raised to prevent the stoppage of construction. The South Park managers have the Santa Fe experience as a guide, and they know how effective the canon litigation was in stopping the Leadville extension from Canon City. Whether the fear of similar obstacles may move them to pay the Rio Grande managers into letting them alone, time will settle. If the writ is served and the matter put in litigation, it is safe to say that Leadville will have no railroad this year, and perhaps not next.

Detroit River Crossing.—In pursuance of the joint resolution of Congress, approved June 20, requiring the Secretary of War to convene a board of officers of the Engineer Corps to inquire and report whether for railroad purposes the Detroit River can be advantageously bridged or tunneled at the city of Detroit or within one mile above or below that city, the Secretary has designated the following board: Lieut.-Col. W. F. Reynolds, Lieut.-Col. N. Michler, Maj. O. M. Poe, Maj. D. C. Houston and Maj. J. M. Wilson. The board will convene at Detroit upon the call of the senior officer, and will make its report and recommendations to the Chief of Engineers before Dec. 1 next.

Dubuque & Dakota.—Regular trains are now running on the completed section of this road from Waverley, Ia., on the Illinois Central's Cedar Falls & Minnesota Branch, westward 41 miles to Hampton in Franklin County. The grading is completed 51 miles beyond Hampton, to Dakota in Humboldt County, but it is said the track will not be laid until next spring. The line of the road is parallel to the Illinois Central's Iowa Division, and about 20 miles north of it. The road is controlled in the interest of the Illinois Central.

Elizabeth City & Norfolk.—Work on the grading of this road is progressing slowly but steadily, and the contractor is now finishing the road-bed through the Curruck Run Swamp.

Evansville & Seymour.—This company has filed articles of incorporation in Indiana to build a railroad from Evansville northeast to Seymour, the crossing of the Ohio & Mississippi and the Jeffersonville, Madison & Indianapolis roads. The distance is 135 miles, and the capital stock is fixed at \$2,000,000.

Grand Trunk and the Great Western.—A dispatch from London, Sept. 13, says: "Sir Henry Tyler has written to Col. Grey, saying that the Grand Trunk Railway Company considers it better to wait the course of events, and does not propose to prolong the controversial correspondence."

This may be understood as closing the negotiations between the two companies for the present.

Gulf, Colorado & Santa Fe.—The extension of this road is now ready for the rails from Richmond, Tex., to Brenham, 63 miles, except the bridge over the Brazos. The iron for this bridge arrived in Galveston last week, and a considerable part of the rails required have also been received. Tracklaying will be begun as soon as the bridge is up.

Houston & Texas Central.—Work is now well advanced on the extension of the Waco Branch westward. The grading is done to a point 30 miles from Waco, and more than half finished to the Brazos crossing, eight miles further, while the contractors are at work on a section of 16 miles beyond the Brazos. All the bridges and culverts are up except the large bridges at the Aquilla and the Brazos. The track is now laid to a point 15 miles from Waco, 11 miles of that distance having been laid near the end of 1877, but tracklaying has been temporarily suspended to await the arrival of more rails. It is expected that trains will run to the Brazos crossing by November.

Hudson River Tunnel.—Argument on the injunction which now prevents this company from prosecuting the enterprise will be heard by Chancellor Runyon, of New Jersey, Sept. 22. A current statement to the effect that the tunnel company had paid the \$13,000 award for land damages to the Delaware, Lackawanna & Western Railroad Company, is pronounced by Mr. Henry S. White, counsel for the tunnel company, to be false.

Indianapolis, Decatur & Springfield.—This company is said to be dissatisfied with the slow progress made by the contractors on the Indianapolis Extension, and it is probable that the contract will be declared forfeited and that the company will complete the work. Later advices state the contractors have satisfactorily arranged matters and will continue work.

LaFayette, Bloomington & Muncie.—Reports are current that a controlling interest in this road has been sold to Mr. Wm. H. Vanderbilt.

Lockport & Buffalo.—The lease of this road to the New York, Lake Erie & Western Company has been concluded, and the lessee took formal possession and began to run trains over the road Sept. 15. The road extends from Lockport, N. Y., to Tonawanda, where connection is made with the Niagara Branch of the Erie, and is 13 miles long. Part of the track was laid last year, and the rest early in the present year, the completion of the road having been much delayed by litigation over the crossing of the New York Central tracks at Tonawanda.

Logansport, Crawfordville & Southwestern.—A meeting of bondholders is called, to be held in New York, Sept. 24, to see if they can do anything about the recent sale of the road, the property having been knocked down to other parties at a price which will leave little or nothing for the bondholders.

Manhattan Elevated.—A report that this company had made a general reduction in the wages of its employes

is denied by the officers of the company. They say that on assuming management they found diverse systems in vogue on the East and West Side roads, and all that has been done was to equalize them. Eight conductors on the East Side line who were receiving \$2.50 per day were reduced to \$2, and eight others on the Metropolitan road who were working 12 hours per day at a fixed rate a mile were placed on the same footing as the rest. The platform-men on the West Side were getting \$1.70 per day, against \$1.50, the rate paid on the East Side. The latter rate has been generally adopted. Otherwise no changes have taken place.

Michigan Central.—Notice is given that 50 Jackson, Lansing & Saginaw bonds have been drawn for redemption according to the terms of the mortgage, and that they will be paid on presentation to the Farmers Loan & Trust Company in New York, or the Atlantic National Bank in Boston, Oct. 4; they will cease to draw interest from that date. The numbers drawn are: 22, 31, 53, 102, 132, 147, 148, 149, 156, 174, 216, 241, 260, 275, 302, 308, 314, 352, 363, 411, 453, 500, 517, 521, 540, 547, 548, 553, 561, 571, 590, 614, 628, 630, 636, 638, 696, 704, 713, 715, 722, 736, 763, 815, 882, 883, 904, 914, 917 and 920.

Milwaukee & Dubuque.—An effort is being made to revive this project, and the officers of the company have hopes of securing money in New York to build the road.

Missouri Central.—This company, a reorganization of one known as the Jefferson City, Lebanon & Southwestern, proposes to build a railroad from Jefferson City, Mo., westward by Versailles, Cole Camp, Clinton and Butler to the Kansas Line, a distance of about 140 miles. The old company had graded some 20 miles of road-bed out of Jefferson City, and had secured some town and county subscriptions.

Nashville, Chattanooga & St. Louis.—This company has agreed to extend its McMinnville & Manchester Branch from McMinnville, Tenn., to Caney Fork, 13 miles, provided White County will vote \$30,000 in county bonds in aid of the road. The intention is to build the road to Sparta, 14 miles beyond Caney Fork, next year, if suitable local aid is offered.

New Hampshire Railroad Taxation.—The taxes levied on the New Hampshire railroads this year amount to \$215,094, against \$161,578 last year, the increase being due to the different principle of valuation now in force. The taxes of some of the roads are as follows: Boston, Concord & Montreal, \$37,587; Northern, \$35,043; Concord, \$29,257; Manchester & Lawrence, \$25,853; Grand Trunk, \$14,192; Cheshire, \$8,985; Worcester & Nashua, \$2,727; Ashuelot, \$1,850.

New Jersey Southern.—The Tom's River Branch has been extended from its former terminus at Barnegat Junction, N. J., on the Tuckerton Railroad, southward about two miles to the village of Barnegat, the extension being parallel to the track of the Tuckerton road.

New York & Oswego Midland.—On Sept. 13 the United States Circuit Court in New York denied a motion made on behalf of certain holders of receivers' certificates, asking that the Court fix the minimum price at which the road may be sold at \$2,000,000, in order to protect their interests.

Oregon Central.—Oregon dispatches report that this road has been leased provisionally to a corporation known as the Western Oregon Railroad Company, the present agreement being for six months only.

Pennsylvania.—The Railroad Committee of the Philadelphia City Council has approved this company's plans for an elevated road extending into the city from West Philadelphia, and will recommend the passage of the necessary ordinance.

A mortgage for \$75,000 on the West Chester Branch, lately acquired, has been executed, having been authorized by a vote of the stockholders, which is, of course, merely a formality, this company owning all the stock. The bonds are to be issued to pay for the reconstruction of the branch.

Pittsburgh, New Castle & Lake Erie.—Another effort has been made by some of the stockholders to set aside the recent sheriff's sale of this road. They ask to have the matter re-opened on the ground that they were induced to allow the sale on the representation of certain of the directors, who, as they now find, desired to secure control of the road for themselves. The Court granted a rule to show cause why the case should not be reopened.

Port Dover & Lake Huron.—At the recent annual meeting in Woodstock, Ont., it was resolved to assess the bondholders \$7 per \$1,000 bond, in order to repay the town of Norwich a sum which it claims to have paid by mistake in excess of the bonus voted. The bondholders may object, as they do not seem to have been consulted in the matter.

Portsmouth & Dover.—The following statement is made by the President and Counsel of the Eastern Railroad Company in reference to the proposed arbitration with this company: "Under a vote of the directors of the Eastern Railroad the exact matters to be referred under the proposed arbitration between the Eastern Railroad and the Portsmouth & Dover Railroad are to be determined by the President and Counsel of the Eastern Railroad. We have conferred on the subject, and we have no hesitation in saying that the only subject we propose to refer is the amount of stock legally issuable under the lease of the Portsmouth & Dover to the Eastern Railroad in New Hampshire, dated June 1, 1872, and upon which stock dividends are to be paid by way of rent. We shall not undertake to raise any question respecting the validity of the lease itself."

Rochester, Nunda & Pennsylvania.—The Rochester (N. Y.) Democrat and Chronicle of Sept. 11 says: "The now celebrated railroad suit of the directors of the Northern Railroad & Navigation Company of Pennsylvania, including Nathaniel P. Jones and Samuel R. Moore, of Brooklyn; John R. Chadwick and others of McKean County, Pa., against the old board of directors of the Rochester, Nunda & Pennsylvania Railroad Company, was brought to trial on Monday, before Judge Macomber, at the Livingstone equity term, now holding at Genesee."

The plaintiffs seek to set aside the late foreclosure of the said railroad as obtained through fraud, and for damages resulting therefrom to the amount of \$250,000. The whole of Thursday was occupied in arguments of counsel on motion to dismiss the complaint, as not alleging facts to sustain the cause of action, and on the ground that the plaintiff, Jones, being a defendant in the foreclosure suit was now estopped from setting up fraud, and the other joint plaintiffs estopped with him. The Court finally in substance granted the motions, though some evidence is now given on limited issues."

St. Joseph & Des Moines.—Track on this road is now laid to a point six miles beyond the late terminus at King City, Mo., and 38 miles northeast from St. Joseph. Only 13 miles remain to reach Albany in Gentry County, an important town.

St. Louis & Fenton.—This company has been organized to build a narrow-gauge road from St. Louis southeast to the village of Fenton. It will be 16 miles long, and is intended for suburban travel.

ized to build a narrow-gauge road from St. Louis southeast to the village of Fenton. It will be 16 miles long, and is intended for suburban travel.

St. Louis, Kansas City & Northern.—The Missouri Circuit Court has overruled the motion of the Hannibal & St. Joseph Railroad Company for the dissolution of the injunction obtained by this company some time ago. The injunction restrained the first-named company from interfering with the St. Louis, Kansas City & Northern in its use of the Kansas City Bridge, which is owned by the Hannibal & St. Joseph. The companies had a contract for the joint use of the short track leading to the bridge, but it was terminated by the Hannibal & St. Joseph Company some time since. The St. Louis, Kansas City & Northern is now building a parallel road in order to reach the bridge, and Judge Dunn has granted an injunction restraining the Hannibal & St. Joseph Company from interfering with the joint use of the old track until the completion of the new one.

St. Paul & Sioux City.—The track on the Ft. Dodge Branch of this road is now laid to Shelbyville, Minn., 23 miles southward from the junction with the main line at Crystal Lake and 15 miles beyond Garden City, the last point noted. They expect to reach Blue Earth City about the middle of October.

On the Minnesota & Black Hills Branch track is now laid from Heron Lake westward 22 miles, and the company expects to lay some 23 miles more this fall, which will bring the terminus into Pipestone County, within 15 miles of the Dakota line. It is not expected that this line will be finished to Flandreau before next spring.

Tracklaying on the Rock Rapids Branch, from Laverne south, has been delayed by the failure of rails to arrive as expected, but it is now again in progress.

Stratford & Huron.—Contracts were to be let this week for the completion of this road from Listowel, Ont., northward to Wiarton, on Georgian Bay, a distance of 78 miles.

Tennessee State Railroad Bonds.—In Philadelphia, Sept. 10, application was made to Mr. Justice Strong, of the United States Supreme Court, sitting as Circuit Judge, to set aside the order appointing Wm. H. De Lancey Special Master to examine into and report on the liens on the various roads, in the suits brought by C. Amory Stevens to enforce the lien of the Tennessee state internal improvement bonds on the roads in whose aid they were issued. After hearing arguments the judge made an order granting the application and annulling the appointment of the Special Master.

Washington City, Virginia Midland & Great Southern.—At the bondholders' meeting in Baltimore, Sept. 16, it was announced that holders of over three-fourths of the bonds had accepted and signed the plan of reorganization adopted at the previous meeting. The bondholders then elected Robert T. Baldwin, Robert Garrett and T. Wilcox Brown, all of Baltimore, trustees to carry the agreement into effect, by buying the road at the foreclosure sale and organizing a new company under the plan.

Welland Canal Enlargement.—Proposals will be received by F. Braun, Secretary of the Department of Railways and Canals, at Ottawa, Canada, until Oct. 3 for the construction of a regulating weir, road-bridge and other works on the Welland Canal, at Port Dalhousie, Ont. Plans, specifications, etc., can be seen at the office in Ottawa, or at the Welland Canal office in St. Catharines, Ont., after Sept. 20 next.

Windsor & Essex Centre.—This company has been fully organized, the required amount of stock having been subscribed. At a recent meeting a survey of the line was ordered, and committees appointed to secure depot grounds at Windsor, and to solicit municipal subscriptions. The line is to run from Windsor, Ont., opposite Detroit, southeast to the Canada Southern at Essex Centre, a distance of 15 miles, and an extension 15 miles further, to Leamington on Lake Erie, is under consideration.

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Atlanta & West Point.

This company works a line from Atlanta, Ga., to West Point, 87 miles, of which it owns 81 miles and leases 6 miles, from Atlanta to East Point, from the Central of Georgia and Georgia Railroads. Its report is for the year ending June 30, 1879.

The equipment consists of 17 engines; 7 passenger and 4 baggage, mail and express cars; 113 box, 18 stock, 23 platform, 3 coal and 5 cab cars. Two passenger and 1 baggage car were added during the year and two baggage cars broken up. A postal car and 10 coal cars have been received since the close of the year.

The capital account is as follows:

Stock (\$15.21 per mile).....	\$1,232,200.00
Bonds (\$1.025 per mile).....	83,000.00
Accounts due, dividends unclaimed.....	12,513.07
Profit and loss.....	117,193.70

Total.....\$1,449,906.77

Road, etc. (\$14.725 per mile).....	\$1,192,736.22
Vicksburg & Meridian preferred stock.....	3,432.00
Cash, bills and accounts receivable.....	248,738.55
Total.....	1,449,906.77

Stock and bonds were unchanged during the year. The capital account is remarkably light, and the very small debt has enabled the company to pay dividends steadily to its stockholders.

The traffic for the year was as follows:

Passengers carried.....	1878-79.	1877-78.	Inc. or Dec.	P. c.
Tons freight carried.....	74,885	69,133	I. 5,752	8.3
Bales cotton carried.....	73,491	70,503	I. 2,988	4.2

The cotton is included in the total tonnage; 44,965 bales were local and 29,293 bales through, the local showing a slight decrease, and the through a considerable gain.

The earnings for the year were as follows:

Passengers.....	\$67,580.24	\$67,828.34	D. \$248.10	3.6
Freight.....	202,487.93	193,417.83	I. 9,070.10	4.6
Mail and express.....	17,604.09	19,421.90	I. 1,817.81	9.8
Miscellaneous.....	12,590.65	7,372.40	I. 5,218.25	70.5

Total.....\$330,262.94

Net earnings.....	\$123,370.64	\$122,435.40	I. 935.24	0.8
Gross earn. per mile.....	3,796.13	3,691.27	I. 104.86	2.8
Net.....	1,418.05	1,407.30	I. 10.75	0.8
Per cent. of exps.....	62.64	61.87	I. 0.77	1.2

Included in expenses is the rental of the Georgia and Central tracks, which last year was \$6,166.66. The expenses also include \$22,000 for new steel and iron rails in excess of annual wear, and about \$5,000 for new equipment; deducting these payments for improvements, the current expenses were 54 1/2 per cent. of gross earnings.

The result of the year was as follows:

Net earnings.....	\$123,370.64
Interest account.....	\$5,628.63
Dividends, 8 per cent.....	98,576.00
Surplus for the year.....	\$19,166.01
Profit and loss balance, July 1, 1878.....	\$107,880.93
Less bond exchange account charged off.....	9,853.24
Total.....	98,027.69

Profit and loss balance, July 1, 1879.....\$117,193.70

The freight business of the year showed an increase, though the business at West Point suffered from diversion of local business to competing lines. Through travel fell off on account of the yellow fever, causing for several months a general cessation of travel through the South.

The substitution of steel for the old light iron rails was almost finished during the year and has been completed since its close. The road-bed and track have also been fully maintained and the wire fencing extended.

A number of the locomotives are old and too light for present service. Two new freight engines have been ordered and two a year will be needed for several years to keep up the stock. The company has rented the shops in Atlanta formerly used by the Georgia Railroad Company, and all repairs will be done there.

The payments for rails, new locomotives and cars have about absorbed the surplus of net earnings remaining from last year. The trains of the road were run through the year without accident.

United New Jersey.

The lines owned and leased by this company are leased to and worked by the Pennsylvania Railroad Company. They include the main line from Philadelphia to Jersey City, 80 miles, whereof 66.2 miles are owned and 22.8 leased; the line from Camden to South Amboy, 61.2 miles; 14.6 miles of branches owned directly; 128.2 miles of branches leased and chiefly owned through investment in their stocks; the leased Belvidere-Delaware Railroad and Flemington Branch, 80 miles, a controlling interest in whose stock is owned; the Delaware & Raritan Canal and feeder, 66 miles owned, and ferries between New York and Jersey City and Camden and Philadelphia. The property thus includes 373 miles of railroad and 66 of canal, of which 142 miles of railroad and the canal are owned and 231 miles of railroad leased, the company owning most of the stock of the leased lines. It also owns a controlling interest in the West Jersey, the Freehold & Jamesburg and some minor lines, which are worked under separate organizations.

The following statements are from the reports made by the company and the State Director to the Comptroller of New Jersey for the year 1878.

The capital account is as follows:

Stock (\$97.069 per mile owned).....	\$20,190,400.00
Funded debt (\$96.613 per mile).....	20,095,548.00
Bonds and mortgages.....	954,902.75
Balance of accounts.....	297,525.05

Total.....\$41,538,375.80

Cost of road, equipment and all appendages.....	\$34,088,531.02
Investments in auxiliary works, stocks.....	4,650,300.00
Investments in auxiliary works, bonds.....	59,850.00
Investments in auxiliary works, advances.....	1,830,685.78
Total.....	41,538,375.80

Stock is unchanged; bonded debt increased during the year \$196,432. The investments in auxiliary works were not changed; they represent the cost to the company of its leased branches and the interest in controlled lines.

LOCOMOTIVE RETURNS, JUNE, 1879.

Master Mechanics of all American railroads are invited to send us their monthly returns for this table.

NAME OF ROAD.	Number of miles operated.	Number of locomotives in service.	MILEAGE.	MILES RUN TO		Average No. of freight cars hauled.	Average cost per freight car per mile, cents.	COST PER MILE IN CENTS FOR					AVERAGE COST OF	
				Ton of coal.	Cord of wood.			Depreciation.	Fuel.	Stokes.	Miscellaneous.	Repairs & material on engines and wheels.	Total.	Coal per ton.	Wood per cord.
Allegheny Valley, River Division*.....	130	31	70,805	2,478	45.37	37.05	30.40	0.561	4.80	2.40	0.41	5.40	13.16	0.00
Low Grade Div.....	120	15	31,805	2,087	34.18	30.87	34.10	0.650	3.04	3.11	0.57	5.08	12.70	0.00
Atlantic & Great Western, 1st and 2d Divs.....	298	82	267,434	3,261	38.33	18.31	16.00		3.18	4.98	0.41	5.55	14.34	1.84
Third and Fourth Divs.....	197	51	171,475	3,208	30.90	25.00	15.30		4.70	5.37	0.52	5.01	13.93	2.00
Mahoning Div.....	86	51	114,276	2,241	43.95	24.88	16.30		4.29	3.40	0.39	5.43	13.66	1.40
Atlantic & Gulf.....	349	21	64,570	2,508	30.15	18.21	10.15		4.50	3.18	0.27	5.28	13.33	1.70
Camden & Atlantic.....	67	14	24,700	1,704	45.80	10.60	19.40		3.57	2.97	0.77	5.31	12.60	0.61
Central Pacific, Western Div.....	128	29	73,672	2,540	30.90	16.31			5.84	10.67	0.53	7.35	24.74	5.25
Northern & San Pablo Div.....	158	38	68,676	2,231	36.54	17.48			9.42	14.70	0.51	9.95	31.56	5.25
Visalia Div.....	157	9	21,520	2,724	40.26	20.29			2.74	16.57	0.44	6.12	26.01	5.25
Tulare Div.....	171	9	22,000	2,488	42.22	17.54			5.64	12.80	0.50	7.26	26.01	5.25
Los Angeles, Yuma, San Diego & Wilmington Divs.....	600	24	70,240	2,001	52.86	14.81			4.35	10.18	0.40	6.79	22.15	5.25
California Pacific Div.....	178	11	31,151	2,837	49.38	34.70			3.38	11.27	0.42	6.72	22.00	5.25
Stockton & Copperopolis.....	49	3	4,863	1,621	70.58	19.50			16.04	8.03	0.41	9.37	28.00	5.25
Sacramento Div.....	130	35	84,330	2,424	40.06	19.01			4.91	23.45	0.48	9.00	38.91	5.25
Oregon Div.....	152	7	17,300	2,457	45.41	21.43			5.91	10.27	0.40	7.21	25.98	5.25
Truckee Div.....	205	27	61,820	2,290	41.47	30.74	20.30		3.46	16.22	0.44	8.40	28.94	5.25
Humboldt Div.....	200	17	47,448	2,701	45.79	21.01			5.60	11.80	0.40	7.43	25.78	5.25
Salt Lake Div.....	210	37	70,990	2,636	35.94	16.87			6.04	14.88	0.51	9.24	30.90	5.25
Chicago & Eastern Illinois.....	153	29	76,192	2,086	37.00	17.69			3.53	13.10	0.32	6.13	18.10	0.00
Clm., La Fayette & Chicago.....	75	10	32,900	3,293	38.30	15.14			2.87	8.04	0.23	5.83	16.47	0.00
Cleve., Col. Clin. & Ind., Col. Div.....	138	56	165,800	2,797	39.11	20.35			2.15	3.70	0.47	6.50	13.03	1.25
Indianapolis Div.....	130	31	87,825	2,828	44.36	20.29			2.77	4.24	0.50	5.47	18.84	1.60
Cincinnati Div.....	130	31	87,825	2,828	44.36	20.29			2.22	3.91	0.51	6.15	18.84	1.60
Cleveland & Mahoning Valley.....	41	6	15,416	2,509	50.05	27.57	11.40		1.07	2.38	0.30	6.70	10.35	2.75
Cleveland & Pittsburgh.....	225	81	170,480	2,170	48.84	18.47	18.40	0.654	2.67	2.49	0.30	6.20	19.70	1.60
Cleveland, Tus. Valley & Wheeling, Dela., Lacka. & Western, Bloomsburg Divs.....	101	13	38,300	2,551	39.05	14.80	35.00		4.87	1.06	0.48	5.89	12.91	0.00
El River.....	80	23	58,067	2,504		20.22			3.70		0.45	4.43	8.94	2.40
Green Bay & Milwaukee.....	10	10	18,909	2,509	43.37	23.58			2.91	4.48	0.19	4.07	11.65	2.40
Erie & Pittsburgh.....	10	10	18,909	2,509	43.37	23.58			2.91	4.48	0.19	4.07	11.65	2.40
Green Bay & Minnesota.....	210	13	29,332	2,350	43.64	18.90	18.20	0.637	1.33	3.54	0.41	6.13	13.24	1.50
Houston & Texas Central.....	408	60	138,247	2,304	52.40	17.00			2.16	7.17	0.55	6.11	13.71	3.30
Illinois Central, Chicago Div.....	402	91	304,514	2,350	60.41	17.04	19.10		3.48	4.18	0.32	5.83	18.73	3.00
North Div.....	145	53	104,814	2,350	52.40	17.04	19.10		3.48	4.18	0.32	5.83	18.73	3.00
Springfield Div.....	113	11	21,092	1,511	36.80	16.41	14.61		4.71	4.29	0.29	5.54	14.77	1.50
Iowa Div.....	401	41	90,717	2,356	54.35	19.21	13.06		1.97	3.33	0.51	4.92	10.13	3.05
Indianapolis, Cincinnati & La Fayette Divs.....	235	43	90,342	2,151	52.16	13.31	31.59	0.860	3.50	4.96	0.38	5.43	15.75	2.40
Jeffersonville, Madison & Ind. Div.....	247	32	108,734	2,358	53.30	24.10	30.30		3.30	5.50	0.30	5.50	15.00	2.75
Kan. City, St. Jo. & Council Bluffs.....	247	32	108,734	2,358	53.30	24.10	30.30		3.30	5.50	0.30	5.50	15.00	2.75
Kansas Pacific.....	750	79	201,084	2,763	31.48	17.47			4.41	7.47	0.41	6.32	17.87	3.24
Lake Shore & Mich. So., Buffalo Div.....	80	20	205,081	2,341	30.11	22.12			3.30	7.03	0.30	5.70	16.30	2.40
Lehigh Valley.....	115	37	203,115	2,508	36.59	28.02			3.01	6.82	0.27	5.70	16.32	2.67
Toledo Div.....	80	25	176,408	2,076	28.56	22.74	41.51		4.57	3.00	0.30	5.47	14.40	2.67
Mich. Southern Div.....	208	43	419,832	2,010	34.44	22.56			4.88	7.94	0.37	5.80	18.35	3.10
Little Rock, Miss. River & Texas.....	100	10	1,800	1,800		22.00			0.48	2.97	0.27	4.70	8.43	5.00
Little Rock & Fort Smith.....	100	10	1,800	1,800		22.00			0.48	2.97	0.27	4.70	8.43	5.00
Louisville & Nashville, First Div.....	322	58	120,511	2,083	36.47	14.38	17.71	1.07	3.98	6.00	0.37	5.45	18.40	2.05
Second Div.....	200	36	60,545	1,932	37.43	14.38	16.80	1.10	3.49	5.29	0.34	5.40	18.77	2.05
Memphis Div.....	131	16	40,746	2,547	44.44	17.04	10.30	1.770	4.53	7.14	0.38	6.73	17.33	2.40
Nash. & Decatur Div.....	122	14	20,366	2,708	35.64	13.90	15.50	1.480	6.26	7.02	0.43	6.97	19.46	2.41
South & North Alabama.....	180	29	64,810	2,480	38.10	17.40	14.63	1.350	3.87	4.00	0.32	5.91	16.04	1.75
Marquette, Houghton & Ontonagon.....	89	34	84,992	1,456	43.70	22.06			1.96	9.58	0.51	6.49	17.94	4.00
Missouri, Kansas & Texas.....	807	79	220,190	2,901	41.46	14.48	16.50	1.950	4.30	4.56	0.42	6.24	16.56	4.00
North. Cent., Elmira & Can. Divs.....	147	16	108,435	2,579	36.79	25.00			3.41	6.35	0.48	6.75	14.27	1.00
Levensville, New York Div.....	130	119	330,927	2,350	37.97	11.66			3.50	1.10	0.60	5.20	12.20	3.00
Amboy Div.....	154	46	54,582	1,837	54.59	16.13			3.89	7.90	0.50	6.20	11.70	0.00
Belvidere Div.....	103	37	57,088	1,513	38.83	15.38			3.80	3.89	0.50	5.10	1.00	3.90
Philadelphia Div.....	191	142	307,740	2,501	29.40	15.38			4.30	3.40	0.50	5.10	1.00	3.90
Middle Div.....	138	15	36,368	2,708	35.64	13.90	15.50	1.480	6.26	7.02	0.43	6.93	19.46	2.41
Pittsburgh Div.....	170	170	480,348			14.08			3.80	3.89	0.50	5.10	1.00	3.90
Tyrone Div.....	177	30	61,931	2,004	29.49	14.08			5.00	3.50	0.50	5.00	1.00	3.90
West Penn. Div.....	104	21	42,777	2,037	36.79	25.00			1.80	2.80	0.30	5.00	1.00	3.90
Levensville, New York Div.....	56	8	13,811	1,451	39.87	21.01			4.30	3.80	0.40	5.00	1.00	3.07
Bedford Div.....	56	8	13,811	1,451	39.87	21.01			4.30	3.80	0.40	5.00	1.00	3.07
Pittsburgh, Va. & Charleston Div.....	30	7	14,961	1,902	53.00	32.05			2.50	3.90	0.30	5.00	1.00	3.03
Pitts. Ft. Wayne & Chi., East Div.....	378	134	431,979	2,805	44.39	20.41	21.30	0.785	2.73	3.11	0.30	5.89	13.40	1.00
West Penn. Div.....	280	114	340,000	2,983	49.00	16.45	17.50	0.607	3.97	3.30	0.38	6.00	5.89	2.33
Cleve., Col. Clin. & Ind., Col. Div.....	128	471	2,505,261	15,465	38.80	96.48			2.67	4.40	0.50	6.57	14.30	0.00
P. C. & St. L. Div.....	197	37	65,581	2,588	46.55	13.71	17.15	1.097	4.46	4.97	0.48	5.95	15.81	8.10
St. Louis, Iron Mt. & So. Ark. Div.....	224	100	225,872	2,550	30.81	20.72	21.30	0.710	6.03	6.08	0.39	5.90	17.88	3.00
St. Louis, San Fran. & So. Div.....	355	100	70,056		36.00	14.00			2.20	5.40	0.25	5.55	13.40	2.10
St. Louis & Southeastern, St. Louis Div.....	308	108	52,608		36.00	14.00			2.20	5.40	0.25	5.55	13.40	2.10
Nashville Div.....	145	30	43,283		36.00	14.00			2.20	5.40	0.25	5.55	13.40	2.10
West Jersey.....	128	90	42,402	2,123	59.03	23.58			6.00	9.00	0.40	6.00	33.90	3.60
Cleve., Col. Clin. & Ind., Col. Div.....	128	471	2,505,261	15,465	38.80	96.48			2.67	4.40	0.50	6.57	14.30	0.00

NAME OF ROAD.	PROPERTY.				LIABILITIES.				TRAFFIC.				EARNINGS.				Interest and rentals.	Dividends.	
	Miles owned.	Miles leased.	Locomotives.	Passenger train cars.	Freight and other cars.	Stock.	Bonds.	Other debt.	Train mileage.	Passenger mileage.	Tonnage mileage.	Rate per passenger per mile.	Rate per ton per mile.	Gross earnings.	Expenses.	Net earnings.			Gross earnings per mile.
Chicago, St. Paul & Minneapolis (five months).....	178	23	18	21	157	\$5,000,000		\$	208,992	4,164,153	13,753,912	2,733	1,740	\$365,135	\$235,021	\$130,114	\$1,817	\$647	64
Chippewa Falls & Western.....	10					143,200	\$144,384		19,344	308,410	79,050	4.190	1.407	24,714	14,589	10,125	2,471	1,013	50
Fond du Lac, Amboy & Peoria.....	28								14,410					8,740	7,516	1,224	312	44	86
Green Bay & Minnesota.....	220	34	16	14	528	8,000,000	3,979,000	1,777,941	338,341	2,327,680	16,340,182	3.742	1.665	384,701	\$77,909	106,792	1,577	438	72
Milwaukee, Lake Shore & Western.....	162		12	11	272	6,000,000	750,000	166,440	351,905	2,228,795	8,048,751	3.400	1.930	245,025	195,280	49,745	1,523	313	80
Mineral Point.....	51		5	7	52	1,200,000	320,000	78,890	72,200	609,899		3.519		125,570	73,270	52,300	2,462	1,025	58
North Wisconsin.....	40					106,500	888,600							76,060	59,345	36,715	1,902	918	32
Pine River Valley & Stevens Point.....	16		1	2	12	51,000	20,000	4,317	15,600	32,000		4.558		16,091		1,006			
Sheboygan & Fond du Lac.....	79		5	12	107	1,410,500	1,000,000	66,749	125,670	781,421	1,366,913	4.426	4.108	99,155	79,083	20,072	1,255	254	80
West Wisconsin (seven months).....	178	23						382,172		4,632,634	91,148,563	3.015	1.888	558,332	540,592	17,740	2,778	88	97
Wisconsin Central.....	321	120	24	26	604	11,435,500	8,168,000	684,932	5,694,816	22,779,216	3.452	2.144	729,087	475,256	254,733	1,012	566	65	
Wisconsin Valley.....	90		5	0	280	60,000	1,700,000		129,040	827,229	5,166,756	5.214	2.770	192,083	106,744	86,339	2,141	950	55

1. The first part of the document is a title page. It contains the title "The Role of the State in the Development of the Economy" and the author's name "John Doe".

2. The second part of the document is an abstract. It provides a brief summary of the main points of the paper.

3. The third part of the document is the introduction. It discusses the importance of the state in the development of the economy.

4. The fourth part of the document is the main body. It is divided into several sections, each discussing a different aspect of the state's role in the economy.

5. The fifth part of the document is the conclusion. It summarizes the findings of the paper and provides some final thoughts.

6. The sixth part of the document is the bibliography. It lists the sources used in the paper.

7. The seventh part of the document is the appendix. It contains additional information that is not included in the main body of the paper.

8. The eighth part of the document is the index. It provides a list of the topics covered in the paper.

9. The ninth part of the document is the glossary. It defines the key terms used in the paper.

10. The tenth part of the document is the endnotes. It contains additional information that is not included in the main body of the paper.

The road-bed has been improved at considerable expense large quantities of sand and clay having been hauled long distances for that purpose, as the soil along the line through the prairies of Eastern Mississippi is peculiarly unfitted for making a solid road-bed. There were 4,054 tons of steel

mac road, which extends the line from Williamsport to Martinsburg, W. Va., 12 miles; the Southern Pennsylvania branch to Richmond, Pa., with a short sub-branch to Ma-

During the year, 777 tons of steel rails and 47,869 new ties were laid. The trusses of the wooden bridge over the Susquehanna were strengthened by putting in arches in each span.